

THE EMPLOYMENT AND TRAINING OUTCOMES  
OF A JOB TRAINING PARTNERSHIP ACT PROGRAM  
IN A COMMUNITY COLLEGE SETTING

By

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The purpose of this study was to learn if the employment and training project of a community college job training program funded by the federal Job Training Partnership Act (JTPA) produced outcomes in relation to the costs and benefits of the program. The outcomes of this program provided information toward determining if JTPA is an effective and efficient strategy for accomplishing national training goals.

This research examined the program outcomes for the 175 students who ended their JTPA vocational training at a north Florida



community college between July 1, 1994, and June 30, 1996. Data were collected directly from the students' JTPA and college records. The data were analyzed through Repeated Measures Analysis of Variance. It was found that posttraining wages were significantly higher than pretraining wages for students who completed training and obtained training-related employment. However, students who did not complete training or who obtained employment outside the field of training did not have a significant difference in posttraining wages when compared to either pretraining wage at time of application or pretraining wage within 5 years of application.

Type of training (Associate of Science or vocational certificate), gender, age, race/ethnicity, public assistance status, and significant work history were not significantly related to the posttraining wage compared to pretraining wage within 5 years of application. Significance was found for the gender of the subject when posttraining wage and pretraining wage at the time of application were compared for the outcomes of completion of training, relatedness of training to employment, type of training, and work history, with males demonstrating a significant wage increase. Based on the findings of a cost-benefit analysis, conclusion was drawn that the project produced positive return to taxpayers.

## CHAPTER 1 INTRODUCTION

Over the last three decades, job training for the purpose of human capital development has become not only an accepted but an expected function of government. This responsibility has fallen largely to the federal government. In examining the history of United States training programs, it becomes clear that the country has a commitment to federal training (Claar & Collins, 1986). Three major pieces of federal legislation, the Manpower Development Act of 1962, the Comprehensive Employment and Training Act of 1972, and the Job Training Partnership Act of 1982, have shaped the character of job training in the United States.

The Job Training Partnership Act of 1982 (JTPA) represents the current response to the training needs of the country. The legislation has had one major revision in 1992. The revision substantially changed the emphasis of the program from employer-provided on-the-job training open to anyone meeting the economically disadvantaged or worker dislocation criteria to employer or

educationally provided training restricted to those "most in need" of training services.

The original purpose of JTPA as stated in the legislation is to establish programs to prepare youth and adults facing serious barriers to employment for participation in the labor force by providing job training and other services that will result in increased employment and earnings, increased educational and occupational skills, and decreased welfare dependency, thereby improving the quality of the work force and enhancing productivity and competitiveness of the nation. (Job Training Partnership Act, 1982, Section 2)

This purpose remained unchanged by the 1992 amendment, but the philosophy of the act was substantially impacted. Employers offering on-the-job training were now required to demonstrate that they were providing training to the "in need" individual over and above the training they would provide to any new employee. This legislative change had in effect shifted the focus of JTPA from in-house employer training to vocational training provided by educational institutions. The intent of the amendment centered on making the federal expenditure of dollars more effective in terms of outcomes and, therefore, more cost effective.

Significant changes are occurring in the economy of the United States and in the global economic arena. Ease of transportation of

goods and speed of communication have created markets for products as well as sources of natural resources, physical and human, that were impractical to access in the past. The expansion of the venues for capitalistic enterprise beyond the limitation of the country's borders changes not only the function of business but also the process by which business is accomplished. At the same time, world competition has become keener with sources of cheap labor, government subsidies to new business, and automated production systems (Day, 1985). American business must hone its competitive edge to keep the economy healthy. According to Parnell (as cited in Day, 1985), education and training are key components to a healthy economy in changing times. These times of change place more pressure on the training system to produce potential employees who can respond to these changing needs of employers. Job Training Partnership Act service providers are charged with the responsibility to help meet employer needs by tapping the unrealized potential of the most disadvantaged members of the society.

Several reports over the past few years have warned that the United States is losing its competitive edge in the global economy

largely because of outdated management styles and a poorly trained work force (Hudelson, 1992). Hudelson (1992) identified the significant reports. Workforce 2000 revealed the changing demographics of the U.S. work force with the accompanying problems in training (Hudson Institute, 1987). In 1988 the William T. Grant Foundation released a report entitled The Forgotten Half which warned of the dangers of investing resources solely in those high school graduates who attend college to the detriment of those who go directly into the work force. America's Choice: High Skills or Low Wages by the Commission on the Skills of the American Workforce in 1990 presented data to support the contention that American industry has chosen to compete based on low wages while our competitors have chosen to pay high wages to skilled workers. In 1991 the Council of Chief State School Officers studied the need for Connecting School and Work. Also in 1991 the Secretary of Labor's Commission on Achieving Necessary Skills (SCANS) published Learning for a Living: A Blueprint for High Performance which defined work-ready skills and recommended a certificate program in each school for attainment of these skills, thereby giving employers a

standard for hiring those prepared for the work force (U.S. Department of Labor, 1991).

Kent (1991) reported on the U.S. Department of Labor predictions for the year 2000 which emphasized the need for education and training among the American work force. Predictions include the following:

- There will be rapid growth in the high skill occupations of technician (32% increase), professional specialty occupations (24%), and executive, administrative and management professions (22%).
- Most of the new jobs will be filled by minority workers, traditionally the least skilled and least educated groups.
- Numbers of new workers in the 16-24 age group will fall sharply.
- Service occupations will grow more rapidly than any other job classification, and these positions will require higher levels of education and training than ever before.

Eisen (1993) stated that U.S. manufacturers recognize that education and training are the answer for coping with rapidly changing jobs with new roles, new equipment, and new

responsibilities required to compete and grow. Highly skilled employees are the critical component for continuously improving design, manufacturing, distribution, marketing, and customer service. The changing demographics of the work force along with the decreasing numbers entering the workplace and the complexity of today's workplace have made education and training of American workers a critical necessity (Eisen, 1993).

One of the issues for manufacturers, according to Eisen (1993), is the question of where to obtain the training. She stated that other than their own internal training programs, manufacturers trust their local community colleges to be most responsive to their needs (p. 19). Manufacturers, she contended, need individually tailored responses not off-the-shelf training programs.

David Pierce (1993), President of the American Association of Community Colleges, observed that during the 1980s real wages declined, the number of available jobs declined, and the wealth of the nation became more skewed with the middle and lower sectors of the economy losing income and the wealthiest retaining an increasing proportion of the wealth. He stated that increasingly the community college is seen as a major player in the economic and

work force development activities of communities. "The community college is uniquely situated to provide occupational preparation"(p. 4), and he urged community colleges to "identify their role and their priorities" (p. 5).

Business practices, tools, and machines have changed. The community college represents the logical place for those not skilled in the new equipment to obtain the skills (Kent, 1991). Kent stated, "The problem simply put, is that technology is outstripping the abilities of the work force. And rapid demographic changes are exacerbating the technology gap" (p. 31).

The growing linkage developing between community colleges and business may be the most significant development in the community college over the past decade (Warford, 1990). Bonnie Franke, Vice Provost for Dallas County Community College District, was quoted in Kent (1991) as saying that the increasing focus on business education and training is not so much a departure from the traditional community college mission as a logical extension of it. "Our mission has always been to serve the needs of the community, whatever those needs might be. We now have a target audience that has, by and large, not been recognized before" (p. 34).



Armstrong (1989) studied one JTPA program in central Utah. He found the program had a job placement outcome rate of 75%-79% during its 5 years of operation. He was particularly interested in the program's congruence with Bertalanffy's (1962) general systems theory of organizations. Armstrong attributed the success of the program to the holistic, self-regulatory, and dynamic nature of the communication process characterizing the program. He noted the synergy created in which the system "assumes a dimension greater than the sum of its parts" (p. 88).

#### Statement of the Problem

Development of human capital constitutes an important element of a nation's economic policy. Government investment in training is intended to produce returns to society sufficient to justify the public expenditure. Adequate research has not been done to establish that the current approach to job training provided through JTPA produces the desired societal value and, therefore, represents the best use of scarce resources.

The desired outcome of government training programs is employment. Employment indicates economic productivity and provides income to the government in the form of taxes. Both of

these results, increased productivity and the accompanying tax income, represent desired societal value. The first concern regarding federal JTPA programs centers on the issues of employment following training. The next question revolves around the cost relative to the value of the resulting employment.

Federal JTPA funds have been distributed nationwide and, within broad guidelines, have been implemented differently in each local area. By examining the various local programs a determination can be made concerning program effectiveness and cost efficiency in relation to the differing program designs. Models for successful programs need to be available to assist local areas in designing and/or modifying programs to achieve positive outcomes and to attain cost to benefit ratios approaching the desired federal 10% rate of return on investment.

#### Purpose of the Study

The purpose of this study was to learn if the employment and training program of a community college job training program funded under the federal Job Training Partnership Act (JTPA) produced positive outcomes in relation to the costs and benefits of the program. The outcomes of this program provided information

towards determining if JTPA is a viable strategy for accomplishing national training goals.

Specifically the purpose of this study was to determine if the investment costs of this JTPA training was equal to, less than, or greater than the federally established goal of 10% rate of return to investment in the form of increased income tax dollars as a result of training. The following questions guided the direction of this study:

1. What is the difference in pre- and posttraining wages when compared to completion or noncompletion of training?
2. What is the difference in pre- and posttraining wages when compared to job placements in the field of training and job placements outside the field of training?
3. What is the difference in pre- and posttraining wages when compared by type of training completed?
4. What is the difference in pre- and posttraining wages when controlled for student demographics of gender, race/ethnicity, age, and public assistance status?
5. What is the difference between the posttraining wages for those who had no significant pretraining work history and the

posttraining wages of those who had a significant pretraining work history?

### Definition of Terms

For the purposes of this study the following definitions, consistent with the JTPA definitions as specified in the legislation where appropriate, were used:

Program cost refers to the total allocation of funds provided from JTPA to the training program over the 2-year time frame of the study.

JTPA refers to the Job Training Partnership Act of 1982 as amended in 1992.

Community college is a 2-year educational institution established by the state.

Vocational training is education providing specific occupational skills in a program of study recognized and sanctioned by the state resulting in conferring of a certificate or degree and categorized in this study as Associate of Science degree and Vocational Certificate.

Completion of training refers to student who has obtained an Associate of Science degree or Vocational Certificate in the field of vocational training.

Noncompletion of training refers to a student who did not obtain an Associate of Science degree or Vocational Certificate in the field of the vocational training.

Training-related placement refers to employment in the field of the vocational training after obtaining an Associate of Science degree or Vocational Certificate.

Nontraining-related placement refers to employment not in the field of the vocational training after completing an Associate of Science degree or Vocational Certificate.

Noncompletion placement refers to employment, either training-related or nontraining-related, after failing to obtain an Associate of Science degree or Vocational Certificate.

Noncompletion and nonplacement refers to a student who did not complete training and did not obtain employment.

Pretraining wage is hourly wage received in last employment, within five years, prior to JTPA application.

Benefit to society refers to return on investment in the form of federal taxes paid.

Benefit to individual refers to increased wages.

Significant work history is defined by JTPA administrative rules as having “worked for the same employer for longer than three consecutive months in the two years prior to application.”

Public Assistance Status refers to receiving Aid to Families with Dependent Children (AFDC) or Food stamps at the time of JTPA application.

Type of training refers to vocational training in high wage, high demand occupations as specified by the Private Industry Council granting the funds for training to the community college and falling into the broad categories of Associate of Science degree programs and Vocational Certificate programs. Specific training resulted in the following:

Associate of Science degree--in the fields of registered nurse, environmental science, cardio-pulmonary technician, respiratory therapist, dental hygiene, radiography technician, computer science, business administration, legal secretary, and medical secretary.

Vocational Certificate--in the fields of business information technology, office software specialist, certified nursing assistant, commercial vehicle driving, patient care

assistant, corrections, business, licensed practical nurse, medical coding, dental assisting, automotive technician, heating and air conditioning technician, industrial maintenance mechanic, medical office specialist, and medical transcription.

### Delimitations

This research was conducted acknowledging the following delimitations:

1. The study was limited to JTPA eligible individuals residing in one of two local counties and attending a North Florida institution and, therefore, may not generalize to other populations.
2. The study was limited to consideration of JTPA dollars expended and individual wages earned and did not consider noncash benefits to society and/or the individual.

### Assumptions

This study was based on the following assumptions:

1. Obtaining training-related placement with the incumbent cash returns to the society and individual reflects a desired outcome of training.

2. Increased skill levels and earning power of the individual provided by job training is beneficial to the overall economy of the United States.

### Significance of the Study

The changing international economic landscape requires that United States business and industry develop new strategies and techniques to remain competitive. The linkage between education and business dictates that as business changes so must some elements of education. Postsecondary education is being asked to respond to the demand for new work force skills. The community college is evolving as the most appropriate setting for job training.

While there is an abundance of literature calling for change in work force preparation and calling for the change to be centered in the community colleges, few data are available to serve as a model for how this can be accomplished in a manner which provides the greatest benefit to society for the cost. This question is of supreme importance as demands for public dollars grow at the same time that the availability of public dollars diminishes. By compiling information on the federal job training programs, their outcomes and their costs, insight may be gained regarding investment in job



training at public expense and the appropriateness of a community college setting as the venue for job training.

### Summary

Changes in the U.S. economy have raised questions regarding the national approach to human capital investment. Development of human capital has traditionally been the purview of education with federally funded job training programs as adjunct to the usual high school and postsecondary education. Recognition is emerging that job training and higher education need to merge to effectively respond to the greater market demands for a highly skilled and knowledgeable work force which will allow the United States to successfully compete in the world market.

At the same time that the need of business for a more highly skilled work force is increasing, the availability of public funds for education and training are declining. Approaches must be found for utilizing government dollars in the most cost effective way to achieve this goal. This study explored one model for human capital development: a federally funded vocational training program at a Florida community college. The study examined the employment

outcomes and the public returns of the program in relation to the training provided at public expense and the student demographics.

## CHAPTER 2

### REVIEW OF THE LITERATURE

Given that significant changes are occurring in the economy of the United States, primarily due to the rapidly evolving world market place and the ease of information exchange afforded by computer networks, the issue of how human capital development should be approached takes on greater urgency than at any previous time in history. According to Thurow (1991), strong national economies are built on one or more of four factors: greater wealth, more natural resources, better technology, or a more highly skilled work force. In Thurow's opinion, the human element will be the most important factor of the four in the 21st century. His evidence for this opinion is based on the observation that the global economy has leveled the field in terms of natural resources and capital and that technological advances will make every industry high tech. This leaves only the skill of the work force as the variable which will give one nation the competitive difference and determine its economic strength.

Marshall and Tucker (1992) stated that there are only two ways to compete in the integrating world economy: reduce incomes or improve productivity and quality. They maintained that the key to productivity and competitiveness rests on the skills of the people and on the capacity of the nation to use highly educated and trained people which will maximize advantage in the workplace. Marshall and Tucker (1992) predicted that the national prosperity of the United States will evaporate if the current state of stagnant productivity continues and the maintenance of the standard of living is accomplished by accumulating debt. They noted that other nations have improved competitiveness by implementing human resource policies designed to increase the productivity of workers. The United States has continued to view labor from the perspective of the system and practices devised by Frederick Taylor in 1920 (Marshall & Tucker, 1992). Taylor's scientific management developed in response to the industrialization of the nation at a time when most of the labor force were illiterate. Marshall and Tucker (1992) observed that the United States educational and industrial systems need to change to meet the challenges of the global marketplace.

Parnell (1990) stated that higher education is the vital link to national economic development. He reasoned that the research and development component and the technology transfer problem are logically the domain of higher education. Since the period of rapid expansion 25 to 30 years ago, and gradual expansion since then, community colleges have evolved into a major arena for the training of technically skilled workers at a variety of levels incorporating more or less general education preparation.

Brock (1991) entreated community colleges to provide ongoing quality skill-enhancing training. Brock, who chaired the Secretary's Commission on Achieving Necessary Skills (SCANS), believed that the key to the nation's economic future rests on how well the quality of the workforce is improved.

#### History of the Job Training Partnership Act

The Job Training Partnership Act, sponsored by Senators Dan Quayle and Edward Kennedy, was passed by the U.S. Congress and signed by President Ronald Reagan in 1982 to be effective in 1984 as Public Law 97.300. The JTPA replaced the Comprehensive Employment and Training Act (CETA) of 1973 which had fallen into disrepute as ineffective just as the Manpower Development Act

(MDTA) of 1960 had before CETA. While these three laws established and continued the federal role in job training, numerous other pieces of legislation impacted and/or modified these acts, the Vocational Education Act of 1963 being the most notable. Other significant legislation included the Economic Opportunity Act of 1963, Neighborhood Youth Corps, Job Corps, Project Mainstream, Public Employment Program, and the Emergency Employment Act (Yglesia, 1987). However, at this point in time, services offered under JTPA are stand-alone services with suggested coordination with other existing programs.

Katsinas and Swender (1992) observed that JTPA differed from CETA in two significant ways. The JTPA legislation emphasized employment in the private sector while CETA emphasized public sector employment. The JTPA, unlike CETA, established local governing boards comprised primarily (51%) of private sector members who have decision-making power over expenditures of the funds. The logic of these changes rested on the belief that local business people would fund training that was useful to their own communities rather than allowing the U.S. Department of Labor to dictate these decisions.

The JTPA legislation specified that each state develop its own plan for expenditures of the federal JTPA funds and submit the plan to the Employment and Training Administration of the U.S. Department of Labor annually for approval. Each governor appoints a JTPA liaison to receive the funds and report the required federal information. Each state also forms a State Job Training Coordinating Council (SJTCC) which approves the local plans and sees that they comply with the state plan and federal regulations. The SJTCC also distributes the funds, based on the formula specified in the JTPA legislation, to the various Service Delivery Areas (SDA) in the state. Each SDA forms a Private Industry Council (PIC), 628 nationally, which makes the decisions related to the training needed in the area and writes the local plan for training (Katsinas & Swender, 1992).

None of these basic provisions were changed by the 1992 amendment to JTPA. In 1988 an amendment to the Omnibus Trade and Competitiveness Act created a new act, Title III, to the JTPA legislation, allowing for a different set of eligibility requirements that gave workers dislocated from their jobs, due to plant closure or lay off, access to retraining without requiring that they meet federal Poverty Guidelines.

In the early 1990s several articles by the same author appeared in professional and popular magazines. The Reader's Digest (Bovard, 1990) reverberated through the U.S. Congress and the JTPA community. Bovard (1990) stated that "while the JTPA is more effective than CETA, all too much of its \$21 billion has been misused" (p. 138). Bovard proceeded to list a series of expenditures made by JTPA in various geographical locations that amounted to subsidies for businesses which would have expended those funds anyway and to cite examples of JTPA funds used in conflict of interest situations that benefitted local businesses. Bovard also charged that JTPA statistics were manipulated to slant JTPA placement rates favorably.

Criticisms such as those proffered by Bovard were the impetus for the 1992 amendment to the JTPA legislation. The amendment shifted the emphasis of the act from a business orientation to an individual orientation. On-the-job training provided by an employer was mandated to consist of training for the individual that was over and above training that was done for any new employee. Emphasis was also shifted to the most-in-need individuals who had barriers to employment beyond simply being economically disadvantaged. More comprehensive assessment and individualized service



strategies were required. Restrictions on the use of funds for economic development activity curtailed the ability of the Private Industry Councils to make financial awards to local area Chambers of Commerce. These changes, in effect, made the classroom training option the choice that most easily and effectively met the new guidelines.

A study by the General Accounting Office in 1991 and an audit issued in 1993, based on the previous year's data, by the Office of the Inspector General (Masten, 1995) confirmed some of the concerns raised by Bovard. The nationwide audit reported that in the Title II-A Program for economically disadvantaged, 53% who left the program obtained jobs (almost half of which were at an hourly wage of \$5.00 or less) and an additional 14% received some form of employability enhancement, while 33% achieved neither jobs nor employability enhancement.

#### Human Capital Development Theory and Economic Growth

Psacharopoulos (1973) traced the interest in education as a significant element of the economy to the discovery by economists in the late 1960s that the economic output of the country was growing much faster than conventional inputs could explain. The part of

growth that was unaccounted for became known as the residual of ignorance, which led to the field in economics known as the economics of human capital or, as Psacharopoulos defines it more narrowly, the economics of education. Wykstra (1971) labeled this residual as increased productivity reflecting quality rather than quantity. Becker (1993), Denison (1962), Mincer (1962), Schultz (1963), and Weisbrod (1964) attributed the residual in large part to education and training. Becker (1993) asserted that education and training are the most important investments in human capital (p. 17). Wood (1997) stated, "Every reputable economic study confirms that expenditures for public education are in fact investments, rather than merely expenses, which yield sound cost-effective economic and social returns for society" (p. 6A).

Becker (1993) commented that the human capital field evolved from a controversial issue in economics to a field that has acceptance not only by economics and other disciplines but also the general public. He attributed that growth to the way that the analysis of human capital combined theory with attention to the major real-world problems and issues. He observed that sustained periods of growth have not happened world wide without substantial

investment in the labor force. Education and training, according to Becker (1993), are the most important investments in human capital. All countries which have managed persistent growth in income have also had large increases in education and training of their labor forces (Becker, 1993).

Early classical economists such as Parson Malthus, Adam Smith, Alfred Marshall, and J. S. Mills recognized the position of human resources as a part of capital beyond the consideration of labor in terms of hours of work, but little attention was given to the human capital element until the 1960s. Wykstra (1971) attributed the renewed interest in human capital to the recognition of the relationship between human capital and economic growth and development and to the rapidly growing expenditures in education. He saw the inability to identify the sources of economic growth and development as justification to examine investment in education more closely.

Schultz (1961) stated that the most distinctive feature of our economic system is the growth in human capital. He believed that once human capital is taken into account, much about the growth of the economy can be resolved. He pointed out that much of what is,

in fact, investment in human capital had been considered consumption, including education and training. He suggested that measuring yield presents an alternative method for measuring investment rather than by measuring cost and that education could be an important key to the riddle of economic growth.

Klees (1986) defined the conventional wisdom of neoclassical economics when applied to education planning as centering on two elements: economic evaluation techniques like cost-benefit analysis and operation of the private marketplace. The neoclassical perspective focuses on the value of the trade off in utilizing society's scarce resources. The efficiency can be made explicit only by means of attending to the question of costs to benefit.

Wykstra (1971) delineated the methodology for a cost and return comparison, noting that what may seem to be straightforward is often very difficult. The first step is to define an optimum which is when marginal benefits are equal to or greater than marginal costs. Next, all costs and benefits must be measured fully. Thirdly, a decision criteria must be selected from the three decision criteria techniques. Lastly, the future stream of values must be discounted to reflect the time-value of money.

Selecting the decision criteria technique depends on the specifics of the project under consideration. The present value approach measures the worth of an investment, where benefits and interest rate may vary over a finite period of time, and which yields marginal net benefits. Benefit-cost ratios compare gross benefits to costs at the margin to determine if the ratio is at least equal to unity. Internal rate-of-return criteria produces a percentage which can be compared to the interest rate to determine if the present value of benefits and costs are equal (Wykstra, 1971).

Woodhall (1972) stated that whether to include foregone earnings as a cost of training depends on the nature of the research. Woodhall also stated that a discounted cash flow technique accounts for inflation. How heavily an amount is discounted will depend on the assumed rate of interest. Most studies calculate the rate of return which is the rate of interest at which the present discounted value of the costs is exactly equal to the expected value of benefits. In other words, it is a measure of the yield or profitability of the investment. Criticisms of benefit-cost analysis are based on the grounds that earnings differentials do not reflect productivity. Basic assumption of benefit-cost analysis is that relative prices and

salaries are determined by supply and demand, so that the earnings of educated workers reflect their value in the market. "Educated manpower is obviously an important element in economic development. The economy, and its rate of growth, are dependent on an adequate supply of skilled and trained workers. The general acceptance of this view is the basis for some form of educational, planning." (Woodhall, 1972, p. 53).

Psacharopoulos (1976) stated that the rationale for dealing with the earnings gross of taxes in a social rate-of-return calculation lies in the nature of taxes as transfer payments. Marginality refers to a schooling increment over a base level and is used to avoid confusion with average rate of return to all levels of schooling, and adjustment factor for ability/education is just a screening device.

#### Role of Job Training in Human Capital Development

Policy makers, both legislative and bureaucratic alike, have based much decision making about education and training on the neoclassical Human Capital economic model in the last few decades. Education is considered an investment due to the deferred nature of the benefit (Mincer, 1989).

Human Capital Investment Theory emphasizes the supply side, assuming that producing more highly trained individuals will benefit employers, individuals, and the overall economy. The JTPA is a supply side policy, but the legislation modified by the 1992 amendment does address occupational demand. This supply side bias has dominated public policy while the demand side, quality job creation, has not been addressed in public policy but has been left to the marketplace (Easton & Klees, 1990; Kraft & Nakib, 1991). Kraft and Nakib (1991) reasoned that concentrating on supply creates the risk of oversupply, resulting in lower paying jobs and/or jobs that fail to use the abilities of the employees, defeating the original purpose of the investment.

Guthrie (1991) considered the differences between the European approach to the supply side question in contrast to the American approach. France, England, and the other parts of the British Commonwealth concentrate on expanding the numbers of people who receive higher levels of education. In contrast, the United States focuses on elevating achievement standards as a means for supplying more skillful workers. Either strategy, according to

Guthrie (1991), aims at the goal of gaining or retaining an economically competitive position in the world marketplace.

Parnell (1985) pointed out the necessity of full development of our human resources in order to achieve excellence. He stated, "If we do not cultivate the best in our people and fully utilize our human resources, we become a wasteful society regardless of what else we do" (p. 172). He elaborated that this waste is a threat to the country, placing it at a disabling disadvantage in the world economic competition. Derek Bok (as cited in Hanson & Meyerson, 1990) predicted that there will be a press for greater vocationalism in higher education from the consumers, that is, parents and students.

Vaughan (1991) asserted that the new high tech industries are more human capital intensive and rely heavily on educated workers rewarding them with higher wages. He asserted that the United States will be able to maintain its present wealth only by meeting the demand for skilled employees. Vaughan advocated in favor of vocational education as opposed to specialized training programs as the most effective means for producing skilled workers.

Gene Callahan (1995), President of the American Vocational Association, testified before the House Ways and Means Committee



that the vocational-technical education system can provide the means for the United States to remain internationally competitive if the resources are allocated. He observed that the federal investment in college-bound youth is about \$20,000 per student but just \$9,000 for each noncollege-bound youth. He further observed that 70% of American jobs in the year 2000 will not require a college degree.

Gordon (1993) stated that the United States "cannot continue as an economic superpower with our current undereducated workforce" (p. 7). He cited the introduction of technology as one of the primary reason for needing workers skillful enough to use the technology effectively and increase productivity. Many businesses have tried to use technology to dumb-down jobs, but Gordon stated that rather than dumbing-down broader training is needed to empower workers to become more productive. Gordon observed that "investments in human resources must be continuous because the pace of job obsolescence is quickening" (p. 12). He concluded that in order to use the new high tech processes, the bottom 50% of our workforce must be retrained.

### Role of Community College in Job Training

Gleazer (1980), in his examination of the community college and its mission, noted the fact of change in today's world and the problem of community colleges being trapped in the traditional view of college. The institution must be able to change as communities change with new conditions, demands, or circumstances. Gleazer called this the "nexus" function of a community college, providing a learning system which responds to the population's learning needs and focuses on education for community development.

In its 1982 publication, Putting America Back to Work, the American Association of Community and Junior Colleges advocated the partnership of community and junior colleges with business and industry. The Hudson Institute's 1987 publication, Workforce 2000: Work and Workers for the 21st Century, referred to the shift in the U.S. economy from a primarily manufacturing based economy to a more service industry based economy during the latter part of the 20th century. According to the Institute, these new jobs require postsecondary education and higher standards on the part of the American education system.

Tyree and Casner (1982) stated that the catalyst for the creation of a symbiotic relationship between education and industry must be government. They further stated that community colleges should work for a clear legislative mandate and funding to be the primary deliverer of occupational education. To attain this status, Tyree and Casner recommended that community colleges earn the confidence of business and industry in their abilities to meet their needs quickly and competently.

Eskow (1983) called on the leaders of the nation to recognize that the community and junior colleges constitute the foundation of a new national training strategy. As the then newly appointed executive director of AACJC's Putting America Back to Work project, Eskow realized that many governors and local legislators

were not yet clearly aware of the community college system of their state, . . . do not recognize the central role the community college plays in economic development, and there are still business and industrial leaders who do not call on the community college for help in training. (p. 13)

Eskow stated of community colleges that "keeping Americans working is a task worthy of our calling" (p. 14).

Parnell, in his foreword to Day's (1985) Keep America Working Series #2, noted the special role that community, technical, and

junior colleges play in the economic revitalization of the United States: "Their mission places them squarely in the service of local communities--their businesses, their public agencies, their schools, and their cultural and social groups and organizations" (p. 2). The community colleges, said Parnell, have responded to the needs of local business and have established themselves as significant partners in local economic development plans.

In 1986 Penne reported on the involvement of Illinois community colleges in JTPA. While he observed that "Illinois community colleges carry out many components of the program" (p. 36), his article did not specifically state the nature of the training and implied by the examples used that the training was in the form of on-the-job (OJT) rather than classroom training.

Yglesia (1987) and Katsinas and Swender (1992) advocated utilizing the resources that community colleges have to offer the employment and training system. Katsinas and Swender (1992) noted that the initial employment and training legislation, the Manpower Development Act of 1963, preceded the years of establishment and growth of community colleges; therefore, community colleges were not considered an integral part of job

training. They also pointed out that many of those involved in employment and training programs in the 1960s were still part of the current system for delivering job training and "may not have a full appreciation of the roles, functions, and capacities of community colleges" (p. 19).

Davenport (1989) urged community colleges to take a leadership role in responding to the nation's new human capital need for workers trained in service sector employment skills. Chandler (1986) found that the role educators play in JTPA had varied considerably from state to state. While there were some states in which the cooperation between education and JTPA was exemplary, some PICs considered vocational educators as part of a bureaucracy that responds too slowly to the needs of the private sector.

Day's (1985) study of community college partnerships with business discovered that, while two-thirds of the responding colleges have appointed a business/industry coordinator, 60% do not have established business/industry/labor councils and 59% do not offer contract training to large private sector employers. Day commented that there was still a great deal of room for expansion and improvement.

However, in the 1990s, the literature began to reflect a change in the role, and the attitudes toward that role, that community colleges were developing regarding the delivery of training under JTPA. Some states began linking their 2-year institutions in a statewide training network, thereby leveraging the resources of the state into one major marketing effort. Utilizing sophisticated telecommunications and data base systems, California's system virtually offered one 800 phone call to link the employer with the training system that serves the need throughout the state (Kent, 1991).

Atherton (1997) asserted that in the "new, more competitive age, America's community colleges have emerged as vanguard institutions in preparing a new workforce" (p. 6A). Tseng (1997) noted that "our society is shifting from the Industrial Age to the Information Age and the only bridge allowing most people to make a successful transition is the education provided by community colleges" (p. 43). Trachtenberg (1992) observed that community colleges need to behave in a more aggressive manner as they adapt to "a period in the history of American higher education when they are often in many basic ways closer to serving the needs of our new

national economy--in its international struggles--than the many established universities and four-year colleges" (p. 281).

Swender (1992) conducted a national survey of Governor's JTPA Liaisons, SJTCC Chairpersons, and PIC chairpersons in 1991 to assess how these three groups view community colleges. Many of these respondents had been involved in job training program for 15 to 20 years, meaning that their job training experience reached back to the Manpower Development Act years which ended in 1972. Swender found that respondents believed that community colleges were well integrated into the JTPA program, however, community colleges were generally ranked equally with community-based organizations and had very little input into the policy development aspect of these bodies (Katsinas & Swender, 1992).

Warford (1990) reported that customized contract training had become a successful feature of community college programs offered to business. Kent (1991) reported that the Dallas County Community College District opened a \$9.1 million facility, the Priest Center, which functions as a business mall fostering an effective business-education partnership. The Priest Center's Business and Professional Institute has garnered contracts with General Motors, IBM, AT&T, Texas

Instruments, as well as a number of small businesses. Kent also noted the success of Phoenix's Maricopa Community College program which has contracted with Motorola, General Motors, Toyota, and Nissan to provide upgrade training to employees to meet the ever more complex job demands resulting from technology and the need to understand the total work force of a company, not just one piece of the process (Kent, 1991).

As reported by Katsinas and Swender (1992), a group of community college professionals in the areas of employment and training and literacy formed the America's Two-Year College Employment, Training, and Literacy Consortium in 1989. The consortium, dubbed NETWORK, represented 400 community colleges. NETWORK's first task was the completion of a survey of the 1,126 members of the American Association of Community and Junior Colleges regarding institutional involvement in employment, training, and literacy. Of the 384 institutions responding, 71% operated JTPA programs funded by their local Private Industry Councils; 29% operated programs funded by their SJTCCs; and 40% offered programs funded by the Economic Dislocated Worker Adjustment Assistance Act (Title III of JTPA).



Kent (1991) stressed the importance of serving small businesses. Small business accounts for roughly two-thirds of all new jobs and half of all new inventions. Small business also has a strong need for technology transfer skills which community colleges can supply. Nwagwu (1993) supported JTPA as a very useful tool for the community colleges in retaining students and effectively serving economically disadvantaged students in the vocational programs.

Zeiss (1994) stated that scarcely anyone involved with America's community colleges or America's business today would deny the obvious benefits of integrating education and business. He summed up the connection between education and national economic health with "if we want to live well, we must produce well; if we produce well, we must educate well" (p. 509). He predicted that human development will rise to the top of the national agenda. Community colleges, according to Zeiss, are uniquely prepared, by virtue of their mission and their locations, to contribute to the response to these needs. He maintained that the practice of involving business and industry in the vocational training programs of the community colleges has been the reason for the success of these programs. The existence of these linkages provided an

additional reason for Zeiss' pronouncement that the community college will be the venue for meeting the changing needs of business and industry.

Phelan (1994) spoke of the linkages between education and business as synergistic in the sense that the partners, business, industry, government, and community college are all more productive collectively than if each acted individually. He stated that the foundation of a productive America is an educated workforce, and the community college can respond to meet those needs.

In December 1995, Florida Governor Lawton Chiles issued an Executive Order establishing local Jobs and Education Partnership Boards which give community colleges a central role, along with Enterprise Florida, for work force development in the state. Florida's action portends a national trend.

#### Public Investment in Job Training

According to Claar and Collins (1986), the quality of training programs is very difficult to measure. Under JTPA, placement in unsubsidized employment has been the primary criterion for measuring success of training. However, this criterion had led to close screening of JTPA applicants. Claar and Collins (1986) viewed

the intent of the JTPA legislation as training disadvantaged individuals for gainful employment. They believed the program should serve as many eligible people as possible and implied that the practice of "close screening" does a disservice to the target population of the legislation. The 1992 amendment to JTPA corrected this flaw in the legislation.

Cost versus benefit is more difficult to decipher when analyzing a nonprofit enterprise than when analyzing a profit-making business. The definition of profit is clear: excess assets at the end of a given period, usually the fiscal year. Measurement of the product of education is more elusive.

The economic concept of efficiency is broadly interpreted as "a measure of how well society's scarce resources are allocated in accordance with consumer choices which balance the costs of producing a good or service against its presumed benefits" (Romano, 1986, p. 8). Benefits are both personal, for the individual receiving the training, and external, occurring to society.

A generally accepted assumption exists that higher levels of education benefit both society and the individual. For this reason, a shared cost approach has been applied to higher education in recent

history. The relative portion borne by the public, measured in constant dollars, had remained the same from 1947 to 1981 (Hansen & Stampen, 1989).

From the perspective of Human Capital Theory, education and training are viewed as investments which should generate returns greater than the investment in order to justify the expenditure. Psacharopoulos (1973) termed this return as the allocative efficiency of the investment which relates to relationship between benefits and costs. From his analysis of over 53 case studies of returns to education in 32 countries, Psacharopoulos concluded that assessing the economic returns to education "can throw valuable light on questions of resource allocation within the educational sector, and between education and the rest of society" (p. x).

Weisbrod (1964) identified benefits as implicit or explicit and private or social. Explicit benefits are monetary benefits. Private benefits are those that accrue to the individual. Weisbrod (1964) stated two measures of social gains are income and smaller unemployment rates. According to Cohn and Geske (1990), social benefits include private benefits, tax benefits to the society, and external benefits which include the benefits to society that are more

difficult to quantify such as ability of electorate to file income tax returns, to be informed via reading and other media, and so forth. Benefits may be measured using the correlational approach, the residual approach, the direct returns approach, or the indirect returns approach (Cohn & Geske, 1990).

The costs, according to Cohn and Geske (1990), are classified as direct, indirect, or external. The majority of the direct costs are incurred by the educational institution providing the education. Other direct costs which may be considered include the living expenses of the student, transportation costs, books, and supplies. Indirect costs, or opportunity costs, include foregone earnings by the student, the value of the tax exemption afforded to the institution, imputed costs of depreciation, and interest (implicit rent on buildings and wear and tear on physical assets). External costs refer to losses to the economic system as a result of the economic endeavor. External costs are rarely considered in studies of costs and benefits.

The first application of benefit to cost analysis as applied to public expenditures was a requirement in the 1902 River and Harbour Act which directed a report on the desirability of projects taking into account the amount of commerce benefitted by the act

and the cost. According to Cohn and Geske (1990) the use of benefit-costs techniques is based on the principle of "maximum social gain" (p. 93) expressed in dollar values. They further stated, "One plausible and commonly used (though not perfect) form of a social welfare function assumes that changes in income reflect changes in welfare" (p. 96).

Weisbrod (1964) stated that census data provided an unmistakable positive correlation between level of education and income and that educated people who have higher incomes pay higher taxes. Calculation of change in income requires a means of adjusting cross-sectional data for the treatment of time. The calculation which reduces the future stream of earnings to the net present value for the purpose of comparison is known as discounting. Weisbrod (1964) stated that society benefits from the additional tax revenue resulting from education.

Cohn and Geske (1990) identified three methods for evaluating public expenditures: net present value approach, internal rate of return approach, and benefit-cost ratio approach. They stated their belief that for determining whether a project is worthwhile, any of the three methods would provide equivalent answers and that the

most important factor involves the choice of the discount rate noting that the higher the discount rate and the longer the time horizon of the project, the less the value of the expected benefits.

Woodhall's (1992) method for determining the cost-benefit analysis of an educational program begins with measuring the costs and expected benefits as discounted at an appropriate rate of interest and then choosing one of three ways of presenting the information in a convenient form. The three methods for calculating the information for the purpose of comparison are a benefit-cost ratio, a calculation of the net present value of the project, or a calculation of the internal rate of return. A benefit-cost ratio measures the ratio of discounted future benefits to discounted costs at a particular rate of interest. Net present value is the discounted benefits minus the discounted costs. The rate of return, the most popular method according to Woodhall, is the rate of interest that equates the discounted present value of expected benefits and the present value of the costs of the project or, in other words, the rate of interest at which the difference between discounted benefits and costs is zero.

The advantage of the rate of return method is that the rate of interest is not assumed but is provided by the calculation. The rate of return calculation provides the rate at which the benefit-to-cost ratio of a given project is equal to zero. The established goal for the federal rate of return on investment is 10%. Wykstra (1971) observed that the internal rate of return method was "the most popular comparison insofar as human capital is concerned" (p. 16). He noted that the choice of calculation method must be based on which method best fits the comparative circumstances. Bowman (1971) defined the rate of return method as "the most embracing and refined theoretical construct applicable to economic investment in education" (p. 54).

Woodhall (1992) raised two salient questions regarding calculation of cost-benefit of educational programming: Do earnings provide a true measure of the benefits of education/training? Should government policy decisions be based on assessments of economic profitability? Objections to cost-benefit analysis based on earnings as a poor measure of the differentials in earnings rest on the rationale that earnings differentials are more likely to reflect the difference in natural ability, motivation, and demographic



characteristics of workers than on the effects of training (Woodhall, 1992).

Measurement based on earnings also fails to reflect the indirect benefits of education. Woodhall responded to these criticisms by citing the evidence for a strong relationship between levels of education and earnings in studies where other factors have been held constant. She stated that roughly two-thirds of earnings differentials of educated workers can be explained by their education rather than by other factors, such as ability (Woodhall, 1992). Woodhall (1992) argued that measuring the investment aspects of the training does not deny that education generates other investments as well. Knowledge of the economic benefits does mean that educational policy should necessarily give more weight to the economic over the noneconomic objectives of a project.

Cohn and Geske (1990) reviewed studies of the vocational education/training programs since 1968 and found variable rates of return to investment, representing the variety of programs offered across the United States. They concluded that each program needed to be evaluated on its own merit. Leigh and Gill (1997) commented on the need to know if the return estimates currently being reported

for community colleges hold for the experienced workers who return for retraining. Bishop (1989) in a survey of secondary vocational programs concluded that the earnings between vocational and nonvocational high school graduates were significant only when the vocational graduates obtained jobs that were related to their training.

### Demographics

Recent demographic changes have exerted an impact on the American labor force. Reduced birth rates and increased immigration rates combined with the trend toward two working parent families have created an increasingly minority work force. Projections for the year 2000 predict that minorities will comprise the majority of the American work force. Governmental entities, federal, state and local, are recognizing that the technology and information demands of the world-wide economy may exceed the educational preparation of the minorities and that human capital investment is no longer optional but has become a necessary component of national economic strength.

Brock (1991) observed that the growth of the American work force is slowing. Work force growth in the 1970s was 24 million.

Brock predicts the 1990s growth will be only 16 million. He concluded from those figures that "businesses will no longer be able to skim the most highly skilled people from the top and ignore the rest" (p. 22). He also stated that new entrants into the work force will increasingly be minorities and women. The Florida Department of Education predicted in the same year (1991) that in the year 2000 only 27% of all new jobs will fall into low skill categories compared to 40% of jobs in 1991.

According to the American Society of Training and Development (Phelan, 1994), by the year 2000 65% of all jobs will require training beyond high school compared with 54% in 1988. In 1988 75% of the workers for the year 2000 were already employed. The obvious conclusion is that employers will have to provide means for employees to upgrade skills or employees will have to find means to upgrade their skills on their own to maintain their jobs.

The average age of the workforce is increasing. The retirement age is increasing. The number of young workers will drop to 13% and the share of women in the workforce will increase to 47% by the year 2000 (Phelan, 1994). Brock (1987) stated that the real problem is not a labor shortage but a skill shortage. Skilled jobs will go

unfilled while competition for the few unskilled and semi-skilled will be greater among unqualified applicants.

Zeiss (1994) noted that more retired people will return to the workforce and to college. Retraining will be necessary for the existing workforce. Likewise, Davenport (1989) noted these needs in relation to the changing composition of work force demographics with workers becoming older, more female, and more disadvantaged.

Bishop's (1995) 1987 survey of National Federation of Independent Business members found that occupational skills were the most frequently cited reason for employer hiring selections. The same study also found that occupational skill level related positively to productivity and wage rates. Bishop (1995) also considered job turnover and occupational turnover in relation to occupational training. He found a decline in occupational turnover and a rise in job turnover meaning that the returns on occupational skills has increased at the same time that incentives for employers to invest in occupational skills training have decreased. Bishop's conclusion was that education must provide the required training as it is unlikely that employers will provide it.

Gleazer (1980) noted the broad diversity of learners at the community college. From ages 16 to grandparents, from welfare to Porsches, full time and part time, they come and go, and come again to the community college. He predicted that education will be concurrent with the other responsibilities of adulthood and that community colleges would lead in adopting the principle of lifelong learning.

Declining birth rates are impacting both the labor force and community college enrollment. Ron Zemke (1985), senior editor of Training, observed that community colleges and universities had discovered industrial training as a new source of enrollment and revenue. He noted that industry-education cooperation had become a euphemism for the phenomenon of higher education viewing the world of business and industry as a market rather than a partner. Zemke characterized the relationship as a client-vendor relationship.

In fact, predicted declines in postsecondary education for the 1980s for demographic reasons did not materialize. A higher percentage of high school graduates chose to enroll in postsecondary education (Bishop, 1995). At the same time massive down sizing in business and industry with resulting lay offs encouraged more adults

to turn to education and training programs as a vehicle for returning to the labor market. Becker (1993) stated that the predictors of falling enrollment failed to appreciate that benefits from college rose faster than costs and students respond to changes in both benefits and costs. Bishop (1995), citing the National Center for Education Statistics, stated that "despite the 13% decline in the size of the 18-to-24 cohort, the number of occupational certificates and occupationally oriented associate's and bachelor's degrees has risen more than 20%" (p. 39). The net result has been a rise in postsecondary vocational education.

Kappner (1994) testified that adult education enrollments grew from 2 million in 1980 to 4 million in 1994. She credits the increase to increased federal funding, changing workplace demands, need for English language instruction, and coordination with occupational training programs such as JTPA.

According to Lombardi, in 1975 (as cited in Cohen, 1992), financial aid has been a major factor in attracting the poor, disadvantaged, and minorities to the community college. Immigration has been a larger factor in the growth of community college enrollment than has the birth rate. Lombardi (as cited in

Cohen, 1992) also noted the phenomena of part-time students being the majority of community college students. Marketing and selling the community college to the older age groups has helped to counter the decline in the 18- to 22-year-old age group (Cohen, 1992).

Breivik (1986), in her edited volume considering alternative learning approaches, cited the changing student demographics in the community college. She listed older students, minorities, and students from other countries as replacing the traditional students.

Cohen and Brawer (1996) reported that by 1991 community colleges, with 39% of the total higher education enrollment, enrolled 47% of the ethnic minorities. Enrollment for women exceeded that of males even in some of the formerly male-dominated curricula areas. The data showed that the enrollment for Hispanic groups exceeded the Hispanic proportion of the population in 41 states (including Florida). In general, students who entered community colleges instead of universities had lower academic ability and aspirations and were from the lower socio-economic class, had lower family income, and attended part time.

Simmons (1994) noted the increased access for the physically and learning disabled at community colleges, a population that community colleges have counted among their diversity of students for a long time. Learning-disabled students, Simmons maintained, have been served with increasing effectiveness and innovation.

Rendon and Valadez (1994) credited the increase in immigration with the increasing diversity of the community college student population. Community colleges remain attractive to nontraditional student populations. By the year 2000 students of color will constitute 30% of community college enrollment, and that percentage will increase to 40% by 2025. By 2030 people of color will make up half of the American population. As early as 2000 minorities will be the majority in 53 of America's largest cities.

Pincus (1994) cited some statistics related to minorities in public community colleges. He found that less-advantaged students continue to be overrepresented in public community college enrollment. In 1988, 39.5% of women college students were enrolled in community colleges compared to 30.1% of men college students. In 1988, for students from families with incomes below \$17,000, 29%



were enrolled in community colleges as compared with 14%-23% in 4-year institutions of varying types. Only 17% of community college students came from families with \$50,000 or more income, while 21%-42% in the \$50,000+ bracket were enrolled in 4-year colleges. Also in 1988, 36% of Caucasian students were enrolled in community colleges, while 42% of African American college students, 56% of Hispanic, 55% of Native American, and 40% of Asian students were enrolled in community colleges. Pincus also noted that enrollment in vocational programs at community colleges has been increasing and that noncompletion rates among community college students has also been increasing.

### Summary

Training has been a national response to the need for skilled manpower to sustain economic growth and productivity for at least 4 decades. In all probability training programs will continue to be a federal initiative into the next century. The trend for community colleges to provide at least a portion of the training is also likely to continue.

In light of these facts, and the fact that funding is not likely to be increased, the most effective programs need to be identified and

replicated. Which variables produce the desired results and at what cost to the public are important questions to examine.

### CHAPTER 3 DESIGN OF THE STUDY

The purpose of this study was to learn if the employment and training program of a community college job training program funded under the federal Job Training Partnership Act (JTPA) produced outcomes in relation to the costs and benefits of the program. The outcomes of this program provided information towards determining if JTPA is a viable strategy for accomplishing national training goals.

Specifically, the purpose of the study was to determine if the investment costs of this JTPA training was equal to, less than, or greater than the federally established goal of 10% rate of return to investment in the form of increased tax dollars as a result of training. The following questions guided the direction of this study:

1. What is the difference in pre- and posttraining wages when compared to completion or noncompletion of training?

2. What is the difference in pre- and posttraining wages when compared to the job placements in the field of training and job placements outside the field of training?
3. What is the difference in pre- and posttraining wages when compared by type of training completed?
4. What is the difference in pre- and posttraining wages when controlled for student demographics of gender, race/ethnicity, age, and public assistance status?
5. What is the difference between the posttraining wages for those who had no significant pretraining work history and the posttraining wages of those who had a significant work history before training?

### Methodology

A community college located in northern Florida has operated a job training program utilizing federal funds under the Job Training Partnership Act (JTPA) since 1987. The college, established in 1965 and governed by a District Board of Trustees, serves a two-county district that is primarily rural and low income with one urban area of less than 100,000 population. An open admissions institution, the college enrolls over 12,000 diverse students. The college is

accredited by the Southern Association of Colleges and Schools and offers both an academic degree, Associate of Arts, and vocational preparation resulting in an Associate of Science degree or a vocational certificate.

The college agreed to provide the following blinded information on the 175 students who completed their job training during Program Years 1994 and 1995 (July 1, 1994 through June 30, 1996):

1. type of training,
2. training completion information,
3. job placement information including wage at placement and type of employment,
4. student data (gender, race/ethnicity, age, significant work history, wage prior to training if any, and public assistance status), and
5. total funds expended in each of the two program years under study.

The JTPA programs share the goal of transitioning hard-to-place individuals from unemployment to work. While the JTPA legislation requires consistency in the basic elements of eligibility, assessment, case management, training, and employment outcomes,

wide latitude is permitted in implementing strategies. The results of this single college study will generalize to other similar institutions operating job training programs under JTPA. The study explored the job training model provided by this community college in terms of the outcomes for subject students and the economic costs and benefits of the program to society. The results of this study may demonstrate the vitality of the model and, following replication, provide useful information and a viable approach for similar institutions.

### Design

To answer the questions listed above, a recurrent institutional cycle design as described by Campbell and Stanley (1973) was conducted to examine pre- and posttraining wages in relation to training. Specifically, the factors of completion of training, the relationship of training to employment placement, type of training, significant work history, and student demographic data were compared for the difference in pretraining and posttraining wage. The study then focused on the costs and economic benefits to society of obtaining a training-related placement as a result of Federal JTPA funds expended. Questions were addressed using analysis of

variance. Cost benefit was calculated using the internal rate of return formula to determine the cost-benefit ratio of direct costs in dollars. The quasi-experimental design identified by Campbell and Stanley (1973) as the Recurrent Institutional Cycle Design combines two pre-experimental designs in a manner which complements the weaknesses of the two designs to create a third design which overcomes most of the threats to validity inherent in the two designs alone. Campbell and McCormack (1957) created the design to study the effects of a training program on leadership/authority attitudes of Air Force cadets toward superiors and subordinates. While the setting did not allow control over who would be exposed to the experimental variable, the recurrent nature of the treatment (training) allowed two kinds of comparisons relevant to the dependent variable (attitude). In this study a similar situation was present; who applied for vocational training could not be controlled. but comparison could be made on the existent differences in the pretraining wages.

The inability to randomly select subjects for the study or to assign subjects to experimental and control groups precluded the possibility of a true experimental design for this study. However,

several circumstances made this quasi-experimental study appropriate for this author. In terms of future career plans, a research project in the area of job training afforded an opportunity to expand expertise in the field. The public assistance element of the study presented a timely and important component for enhancing understanding of job training as it relates to the disadvantaged and dependent members of society who must now, with the arrival of welfare reform, enter the workforce with little or no experience of the workplace. Much of the federal, state, and corporate job training over the next decade will be directed at preparing and improving the job performance of these new entrants into the labor force. This research was also practical for the author in that there was no expense to conduct this study.

The design for this study can be conceptualized as follows:

$$O_1 \ O_2 \ X \ O_3$$

$X$  = training

$O_1$  = pretraining wage within 5 years of application

$O_2$  = pretraining wage at the time of application

$O_3$  = posttraining wage



The comparison between  $O_1$  and  $O_2$  corresponded to Campbell and Stanley's (1973) Design 3, the Static Group Comparison. The comparison between  $O_2$  and  $O_3$  corresponded to Design 2, One-Group Pretest-Posttest Design (Campbell & Stanley, 1973). Taken together the design became Design 15, the Recurrent Institutional Cycle Design (Campbell & Stanley, 1973). This design fit the research questions of the study and accommodated the limitations of the research environment.

There was no instrumentation effect in this study, and, essentially, the effect of mortality (failure to complete training and/or failure to obtain employment) was measured as an outcome in this study. This combination design minimized the threats to internal validity of history and test-retest effect. Likewise, regression was not an issue as the wage variable was not a factor in selection of subjects. However, the threats to internal validity due to selection, maturation, and the interaction of selection and maturation remained.

Type of training under JTPA may include a wide variety of vocational occupations as determined by the legally established Private Industry Council (PIC) which determined the type of training

needed for their local area. Training in high wage, high demand occupations was a PIC criteria for the designated geographic Service Delivery Area (SDA) of this study, and training was allowed for up to 2 years' duration. Liberal arts courses leading to an Associate of Arts degree were not allowable training under JTPA (although general education courses that were required as part of a vocational training program could be funded). For the purpose of this study, the JTPA definitions, as defined either in the act or in the Administrative rules, were used for the variables of training, placement, training-related placement, and significant work history.

To address the question of the project cost-to-benefit ratio, expressed in dollar values, per training-related placement obtained by the project, the total cash expenditures of the project over the time frame of the study was divided by the total number of training-related placements to obtain an average cost per training-related placement. Since few applicants had wages at the time of application to the JTPA project, pretraining wage was valued at both the pre-wage at the time of application and the most recent wage earned by each subject within the 5-year period prior to application to the program. Subjects who had no wage within the 5-year period prior

to application were considered to have zero wage for that variable. No adjustments were made to reflect a minus income for those subjects whose only source of income within the prior 5 years was public assistance. Similarly, since few applicants had wages, the issue of foregone income was not factored into calculations.

Discounted wage projections of both pre- and posttraining wages for each subject were calculated. The internal rate of return, as presented by Woodhall (1992), was then calculated:

$$\sum_{t=1}^n \frac{E_t - C_t}{(1+r)^t} = 0$$

where  $n$  is the number of work years,  $E$  is the expected income,  $r$  is the rate of interest, and  $t$  is the number of years in the future. This provided the interest rate at which benefits equal costs. This summary statistic revealed whether the project provided benefits greater than, equal to, or less than the 10% federal rate at a given discount rate.

For the purpose of this study, the number of years worked for each subject was computed as the number of years remaining from the age of completion of training to the age of 63.5 which represents

the midpoint between early social security retirement and full social security retirement. Pre- and posttraining wages were compared to establish whether an increase in income tax payment existed posttraining. Using Fleenor's (1998) estimates of single wage-earner income taxes paid in combined federal, state, and local taxes, the figure of 35.4% was applied to calculate income tax payment.

### The Population

The population for this study consisted of JTPA-eligible individuals residing in two Florida counties. One county was primarily rural, and the other county contained one midsized (less than 100,000) town. As stipulated in the act, JTPA eligibility was determined by three criteria:

1. residence in the designated geographic area,
2. U.S. citizenship, native born or naturalized, or legal immigrant status, and
3. membership in one of the following funding categories:
  - a. economically disadvantage adult (22 years of age or older),

b. economically disadvantaged youth (21 years of age or younger),

c. dislocated worker defined in Section 301(a)(1) of the act, as individuals who meet one of the following criteria:

(1) have been terminated or laid off or who have received a notice of termination or lay off from employment, are eligible for or have exhausted their entitlement to unemployment compensation, and are unlikely to return to their previous industry or occupation;

(2) have been terminated or have received notice of termination of employment as a result of any permanent closure of or any substantial layoff at a plant, facility, or enterprise;

(3) are long term unemployed and have limited opportunities for employment or reemployment in the same or a similar occupation in the area in which such individuals reside, including older individuals who may have substantial barriers to employment by reason of age; or

(4) were self-employed (including farmers and ranchers) and are unemployed as a result of general economic conditions in the community in which they reside or because of natural disasters, subject to regulations prescribed by the Secretary.

Economically disadvantaged is defined in the legislative rules, Section 4(8), as

an individual who (A) receives, or is a member of a family which receives, cash welfare payments under a federal, state or local welfare program; (B) has, or is a member of a family which has, received a total family income for the 6-month period prior to application for the program involved (exclusive of unemployment compensation, child support payments and welfare payments) which, in relation to family size, was not in excess of the higher of (i) the official poverty line (as defined by the Office of Management and Budget, and revised annually in accordance with section 673(2) of the Omnibus Budget Reconciliation Act of 1981 (42 U.S.C. 9902 (2) ), or (ii) 70% of the lower living standard income level; is receiving (or has been determined within the 6-month period prior to the application for the program involved to be eligible to receive) food stamps pursuant to the Food Stamp Act of 1977; (D) qualifies as a homeless individual under subsections (a) and (c) of section 103 of the Stewart B. McKinney Homeless Assistance Act; (E) is a foster child on behalf of whom state or local government payments are made; or (F) in cases permitted by regulations of the Secretary, is an individual with a disability whose own income meets the requirements of clause (A) or (B), but who is a member of a family whose

income does not meet such requirement. (U.S. Department of Labor, 1991, p. 45769)

The term Secretary in this section refers to the United States Secretary of Labor. The legislation also allows that no more than 10% of participants may be eligible by virtue of documentation of one of the following "hard to serve" categories: disability, pregnant or parenting teen, basic skills deficient, school drop out or 1 year or more behind grade level, recipients of cash welfare, offender, or homeless.

### The Sample

The sample for this study consisted of those JTPA-eligible individuals who chose to obtain training and ended their JTPA affiliation during the 1994 and 1995 Program Years (July 1, 1994 through June 30, 1996), a total of 175 subjects--89 in 1994-95 and 86 in 1995-96. All met the qualifications of JTPA eligibility, acceptance into one of the community college vocational training programs, and either completed training or dropped out of training during the 2-year period of the study.

Assumption of randomness was not a valid concept to the subjects of this study. Few of the students funded by JTPA would have attended training without JTPA assistance; therefore, there was

no pool of similar subjects to assign to a control group and training could not be legally withheld from a portion of the JTPA eligible applicants. The general college student population was not appropriate as a control group because these vocational students were not equivalent. Most were neither on public assistance (if they were, there was no reliable way to ascertain that from college records) nor were they previous wage earners (many were either in high school or recent high school graduates) and all had found resources other than JTPA to fund their training programs.

#### Data Collection

Data were compiled for each subject from the existing JTPA records of the community college utilizing the following categories for training: completion of an Associate of Science degree or Vocational Certificate of Completion, or noncompletion. Employment outcomes were categorized as training-related employment placement (attainment of employment in the field of training), nontraining-related employment placement (attainment of employment in a field outside the field of training), or no employment placement.



Training types were categorized as either Associate of Science degree programs which included computer science, business programs, environmental science, health related technical training programs, and registered nurse, or certificate of completion programs, which included commercial vehicle driving, licensed practical nurse, certified nursing assistant, corrections, and business programs, office software specialist, or medical office software training.

Wage information, both pre- and posttraining, demographic data, and work history information were obtained from the JTPA records. Demographic data were gathered on gender (male or female), race/ethnicity, age (19-21, 22-29, 30-39, 40-49, and 50-59), and public assistance status (yes or no). Data, therefore, conformed to the JTPA definitions for race/ethnicity, significant work history, completion of training, and nature of employment placement (training related or not training related).

By mandate of the JTPA eligibility categories, most applicants either had a subsidized income (public assistance or unemployment compensation) or were earning at or below the poverty level at the time of application. Of the 177 subjects only 18 had any

unsubsidized income at all at the time of applying for training. For this reason, pretraining wages as measured in this study consisted of both the last hourly wage earned by the applicant within the 5-year period prior to application and the wage at application.

Race/ethnicity for this study conformed to the JTPA definitions found in the Program Management Manual. However, due to small numbers, only the White and Black categories were analyzed for the Race demographic. The Program Management definitions were as follows:

1. White (not Hispanic). A person having origins in any of the original peoples of Europe, North Africa, or the Middle East.
2. Black (not Hispanic). A person having origins in any of the black racial groups of Africa.
3. Hispanic. A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin (including Spain), regardless of race.
4. American Indian or Alaskan Native (not Hispanic). A person having origins in any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition.

5. Asian or Pacific Islander (not Hispanic). A person having origins in any of the original people of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands.

Public Assistance Status for the purpose of this study was defined as receiving either Aid for Families with Dependent Children (AFDC) or Federal Food Stamps at the time of application for JTPA training. Applicants could be both working (at a wage below the poverty level for the family size) and receiving food stamps simultaneously.

Significant work history, as defined in the JTPA Program Management Manual, referred to an individual who has worked for the same employer for longer than 3 consecutive months in the 2 years prior to application. Completion of training meant that the participant completed the planned program of study resulting in one of the following: (a) an Associate of Science degree or (b) Certificate of Completion.

The employment was considered training related if the employment occupation was related to the occupational training received. As specified in the JTPA Program Management Manual, training relatedness of employment placement to occupational

training was determined by agreement of the first two digits of the Training DOT Code and the Placement DOT Code as recorded in the student's JTPA file. DOT Codes are found in the Dictionary of Occupational Titles, published by the Federal Department of Labor, which lists and describes occupational titles used by American employers.

### Statistical Analysis

Repeated measures analysis of variance was employed to determine the relationship between pretraining wage, both at the time of application and within 5 years of application, controlling for demographic differences. The internal rate of return method was used to calculate the cost-benefit ratio considering only direct, monetary benefits.

In this research, subjects were compared to themselves to determine the difference between their projected wage earning ability both with and without the training program. Subjects were compared using two different pretraining wages, wage at the time of application and wage within 5 years of application, to provide the most optimistic (the subject would have been able to find employment at the wage they had received within the last 5 years)

and the most pessimistic (that the subject would have continued at the wage at application) comparisons. The potential intervening variables of completion of training, type of training, type of employment obtained, existence of a pretraining significant work history, and the demographic factors of age, gender, race/ethnicity, and public assistance status were modeled into the research to control for the potential effects. The questions regarding these variables were important to establish whether the project actually resulted in positive outcomes. The monetary costs and benefits of the project are meaningful only when the benefits of the project can be demonstrated to be related to the purpose of the project, that is, training and resulting employment.

Pretraining wages, both at the time of application to training and within the 5 years prior to application, compared to postraining wages were examined on four variables: completion or noncompletion of training, obtaining employment or not obtaining employment, whether the employment was training-related (i.e., in the field of training), and type of training completed or attempted. To determine the existence of a significant difference between the means of the subjects both within and between groups, a repeated

measures analysis of variance was conducted. Significance was established at .05 for alpha. The formula used for the repeated measures analysis of variance was as follows:

$$y_{ij} = \mu + \alpha_j + \pi_i + \epsilon_{ij}$$

where

$y_{ij}$  = score for person i of group j

$\mu$  = grand mean

$\alpha_j = \mu_j - \mu$  = treatment effect

$\pi_i$  = repeated score for person I of group j

$\epsilon_{ij} = y_{ij} - \mu_j$  = error factor for person i in group j

### Summary

The purpose of this study was to investigate the employment and training outcomes, as measured by pre- and posttraining wages, of a Florida community college job training program funded under the federal Job Training Partnership Act (JTPA) in relation to the costs and benefits of the program. A secondary purpose was to determine if significant differences in outcomes exist when controlled for type of training, student completion of training, significant work history, and demographics of gender, race, age, and public assistance status. A recurrent institutional design was

employed to examine the pre- and posttraining wages in relation to training. The factors of completion of training, the relatedness of training to employment, type of training, significant work history, and student demographic data were modeled into the research and provided the determination of whether the project achieved significant positive outcomes. The study then focused on the costs and economic benefits to society of obtaining a training-related placement as a result of federal JTPA funds expended.

## CHAPTER 4

### PRESENTATION AND ANALYSIS OF DATA

The purpose of this study was to learn if the employment and training project of a community college job training program funded under the federal Job Training Partnership Act (JTPA) produced outcomes in relation to the costs and benefits of the program. Specifically, the purpose of the study was to determine if the investment return of this JTPA training was equal to, less than, or greater than the federally established goal of 10%.

The following questions guided the direction of this study:

1. What is the difference in pre- and posttraining wages when compared to completion or noncompletion of training?
2. What is the difference in pre- and posttraining wages when compared to the job placements in the field of training and job placements outside the field of training?
3. What is the difference in pre- and posttraining wages when compared by type of training completed?



4. What is the difference in pre- and posttraining wages when controlled for student demographics of gender, race/ethnicity, age, and public assistance status?

5. What is the difference between posttraining wages for those who had no significant pretraining work history and the posttraining wages of those who had a significant work history before training?

### Results of the Study

A north Florida community college has operated a job training program funded by JTPA for 10 years. The college provided data on the outcomes and costs of their program for the time period from July 1, 1994, through June 30, 1996, which constitutes 2 full program years. The data for each student included pretraining wage and work history information, training outcomes relative to type and completion of training, field of placement or lack of placement after training, and student demographic information.

During the 2-year period of this study, 175 students ended their affiliation with the training program. This group of students comprise the sample. There were 89 subjects from the 1994-95 program year and 86 subjects from the 1995-96 program year.

There were 132 subjects who attended vocational certificate programs and 43 who attended Associate of Science degree programs.

The outcome of interest in the study is the posttraining wages of the subjects. The pre- and posttraining wage difference was designated as the response variable. For each subject there were two prewages recorded: the wage at the time of application to the training program, which was zero in all but 18 cases, and the most recent wage within the 5 years prior to application to the training program. In order not to bias the study by using only one or the other, each was used in turn in calculating pre- and posttraining wage and each was analyzed. The distributions of the two responses were examined and found to be normally distributed with only some slight departures from normality. Therefore, an Analysis of Variance was selected as the method for analysis of the data.

### Sample Demographics

The study questions regarding outcomes were combined with the study question regarding demographics to control for these factors and to compensate for the inequality of groups with respect

to the demographic variables. Appendix A presents a matrix of the data analyzed for the study.

As Table 1 presents, of the total of 175 subjects, 126 (72%) were female and 49 (28%) were male. Table 2 presents the data on the race/ethnicity of the subjects. One hundred eleven subjects (63.4%) were white. Using the JTPA race/ethnicity classifications of White (not Hispanic), Black (not Hispanic), Hispanic, American Indian or Alaskan Native (not Hispanic), and Asian or Pacific Islander (not Hispanic), this sample had 55 Black subjects, 6 Hispanic subjects, 1 Indian subject, and 2 Asian subjects. Due to the small numbers, only the white and black race/ethnicity variables were analyzed. The other nine subjects were not included in the race/ethnicity calculations. Repeated calculations regarding prewages within 5 years of application to the program were based on 168 subjects due to missing 5-year data on 7 subjects.

Data presented in Table 3 display the age groupings for the subjects of this study. JTPA regulations define youth as 21 years old and younger. For this sample, 11% fall into this category. The remaining 89% of subjects were grouped in age categories of 22-29, 30-39, 40-59, and 50-59 years old. This 89% of subjects were

Table 1

Job Training Students by Gender

Gender	n	%
Male	49	28.0
Female	126	72.0
Total	175	100.0

Table 2

Job Training Students by Race/Ethnicity

Race/Ethnicity	n	%
White	111	66.9
Black	55	33.1
Total	166	100.0

Table 3

Students by Age at Exiting Training Program

Age at Exiting Program	n	%
19-21	20	11.4
22-29	57	32.6
30-39	54	30.8
40-49	36	20.7
50-59	8	4.5
Total	175	100.0

students above the age of traditional community college students. As observed from Table 4, 32% of subjects were receiving public assistance in the form of Aid to Families with Dependent Children (AFDC) or Food Stamps. As observed from Table 5, 54% of the sample had a significant work history prior to training. Significant work history by JTPA definition means that the subject had been employed by the same employer for longer than 3 consecutive months in the 2 years prior to application to JTPA.

Table 4

Students by Public Assistance Status

Public Assistance Status	n	%
Receiving Public Assistance	56	32.0
No Public Assistance	119	68.0
Total	175	100.0

Table 5

Students by Work History

Work History	n	%
Significant Work History	95	54.3
No Significant Work History	80	45.7
Total	175	100.0

Data Analysis

The analysis for answering question 1 compared the difference between pretraining wages and posttraining wages for completion of training controlling for demographic variables. Table 6 presents the

data for the comparison of posttraining wage to pretraining wage at the time of application to JTPA while Table 8 presents the data for the comparison of posttraining wage to pretraining wage within 5 years of application to JTPA. Calculations comparing wages at the time of application to posttraining wages demonstrated a significant effect on wages for both completers and noncompleters of training with the completers showing the greater gain. The calculation was then repeated using the last pretraining wage, within 5 years, of the subject. Results again showed a significant gain.

As presented in Table 7, when comparing posttraining wage to wage at time of application, completers had a significantly larger difference in pre- and posttraining wages than the noncompleters. Also observed from Table 7, gender was a significant demographic with men attaining significantly higher posttraining wage differences than women.

As presented in Table 9, when the analysis was repeated using the pretraining wage within 5 years of application to the training program, only completers had significantly higher posttraining wages. Wage difference for completers was not related to the gender of the subject.

Table 6

Comparison of Posttraining Wage and Pretraining Wage at Time of Application to Completion of Training Controlling by Gender, Race/Ethnicity, Age at Time of Job, and Public Assistance Status

Source	df	Type III SS	Mean Square	F Value	P Value
Completion	1	533.49301	533.49301	42.18	0.0001
Gender	1	79.94088	79.94088	6.32	0.0129
Race/Ethnicity	1	0.36386	0.36386	0.03	0.8655
Job Age	1	4.00558	4.00558	0.32	0.5743
Public Assistance	1	0.37892	0.37892	0.03	0.8628

Table 7

Comparison of Posttraining Wage and Pretraining Wage at the Time of Application to Completion of Training and to Gender

	Diff Pre-Post LSMean	Std Err LS Mean	Pr >  T  I HO:LSMEAN=0	Pr >  T  I HO: LSMEAN1=LSMEAN2
Completers	7.96507875	0.33311454	0.0001	0.0001
Noncompleters	3.38742914	0.67651322	0.0001	
Female	4.79489190	0.45044478	0.0001	0.0129
Male	6.55761599	0.60261295	0.0001	



Table 8

Comparison of Posttraining Wage and Pretraining Wage within 5 Years of Application to Completion of Training Controlling by Gender, Race/Ethnicity, Age at Time of Job and Public Assistance Status

Source	df	Type III SS	Mean Square	F Value	P Value
Completion	1	445.88259	445.88259	28.19	0.0001
Gender	1	24.16432	24.16432	1.53	0.2183
Race/Ethnicity	1	26.68300	26.68300	1.69	0.1959
Job Age	1	15.01127	15.01127	0.95	0.3314
Public Assistance	1	20.17221	20.17221	1.28	0.2605

Table 9

Comparison of Posttraining Wage and Pretraining Wage within 5 Years of Application to Completion at Training

	Diff Pre-Post LSMean	Std Err LSMean	Pr> T  HO:LSMEAN=0	Pr> T  HO: LSMEAN1=LSMEAN2
Completers	2.17046454	0.38411053	0.0001	0.0001
Noncompleters	-2.08247192	0.77231390	0.0078	

The analysis for answering question 2 compared the difference between pretraining wages and posttraining wages by type of employment obtained controlling for demographic variables. Type of employment was classified as employment in the field of training (training-related), employment outside the field of training (nontraining-related), or no employment. As observed from Table 10, when comparing posttraining wage to wage at the time of application, a significant effect was found for both training-related and nontraining-related employment. As observed from Table 11, further analysis found that training-related and nontraining-related employment were statistically higher (6.58 and 8.17, respectively) in difference in wages than the no job group (0.278). As observed from Table 12, higher posttraining wages were obtained by males (5.85) than by females (4.19). Duncan's Multiple Range Test compared the three levels further and found no difference between the training-related and nontraining-related groups. There was no difference in pre- to postwages for the no job group, but both training-related and nontraining-related had significant increases in postwages.

As observed from Table 13, when the calculation was repeated using the pretraining wage within 5 years of application compared to

Table 10

Comparison of Posttraining Wage and Pretraining Wage at Time of Application to Employment Controlling for Gender, Race/Ethnicity, Age at Time of Job, and Public Assistance Status

Source	df	Type III SS	Mean Square	F value	P value
Employment	2	1228.7451	614.3725	71.77	0.0001
Gender	1	68.8754	68.8754	8.05	0.0051
Race/Ethnic	1	12.9637	12.9637	1.51	0.2202
Age	1	1.7405	1.7405	0.20	0.6526
Public Assistance	1	4.5910	4.5910	0.54	0.4650

Table 11

Comparison of Posttraining Wage and Pretraining Wage at the Time of Application to Employment by Relatedness to Training

	LastDiff LSMean	Std Err LSMean	Pr> T  HO:LSMEAN=0
No job	0.27751699	0.64686127	0.6685
Nontraining- related	6.57857058	0.85548602	0.0001
Training-related	8.17398286	0.27821435	0.0001

Table 12

Comparison of Posttraining Wage and Pretraining Wage at the Time of Application to Employment by Gender

	LastDiff LSMean	Std Err LSMean	Pr> T  HO:LSMEAN=0	Pr>  T  HO: LSMEAN1=LSMEAN2
Female	4.19175571	0.41934588	0.0001	0.0051
Male	5.82829124	0.53847323	0.0001	

Table 13

Comparison of Posttraining Wage and Pretraining Wage within 5 Years of Application to Employment Controlling for Gender, Race/Ethnicity, Age at Time of Job and Public Assistance Status

Source	df	Type III SS	Mean Square	F value	P value
Employment	2	1178.0205	589.0102	51.94	0.0001
Gender	1	31.2203	31.2203	2.75	0.0990
Race/Ethnicity	1	5.5559	5.5559	0.49	0.4850
Age at Job	1	1.2473	1.2473	0.11	0.7406
Public Assistance	1	41.6495	41.6495	3.67	0.0571

posttraining wage, significance was found for relatedness of training to employment, but the difference was not related to the gender of subjects. As presented in Table 14, employment in a training-related field significantly increased wages while employment in a nontraining-related field resulted in no change in wages from pre- to posttraining.

Table 14

Comparison of Posttraining Wage and Pretraining Wage within 5 Years of Application to Employment by Relatedness to Training

	Diff LSMEAN	Std Err LSMEAN	pr> IT1 HO:LSMEAN=0
No Job	-5.38186258	0.74890131	0.0001
Nontraining- related	1.52185932	0.98505406	0.1243
Training- related	2.39114206	0.33173445	0.0001

The analysis for answering question 3 compared the difference between pretraining wages and posttraining wages for the type of training received. The two types of training were a vocational certificate or an Associate of Science degree.

As observed from Table 15, no significant difference was found when posttraining wages were compared to pretraining wages at the time of application for the two types of training. However, also observed from Table 15, significance was found when calculating for the gender of the subjects. Further analysis, as observed from Table 16, found that males obtained significantly larger differences in wages (8.46) than females (6.46). When the calculation was repeated, as presented in Table 17, comparing posttraining wage and pretraining wage within 5 years to type of training, no significance was found for type of training and no significance was found when calculating for the gender of the subjects.

Table 15

Comparison of Posttraining Wage and Pretraining Wage at Time of Application to Type of Training Controlling for Gender, Race/Ethnicity, Age at Time of Job, and Public Assistance Status

Source	df	Type III SS	Mean Square	F value	P value
Training Type	1	12.27308	12.27308	0.78	0.3786
Gender	1	102.57344	102.57344	6.51	0.0116
Race/Ethnicity	1	1.78162	1.78162	0.11	0.7370
Age at Job	1	0.64141	0.64141	0.04	0.8403
Public Assistance	1	0.76892	0.76892	0.05	0.8254

Table 16

Comparison of Posttraining Wage and Pretraining Wage at Time of Application to Type of Training and to Gender

	Last Diff LSMean	Std Err LSMean	Pr>  T  HO:LSMEAN=0	Pr>  T  HO: LSMEAN1=LSMEAN2
A.S. degree	7.83757148	0.72957210	0.0001	0.3786
Vocational certificate	7.09101443	0.40846380	0.0001	
Females	6.46461781	0.50219084	0.0001	0.0116
Males	8.46396811	0.62944224	0.0001	

Table 17

Comparison of Posttraining Wage and Pretraining Wage within 5 Years of Application to Type of Training Controlling for Gender, Race/Ethnicity, Age at Time of Job, and Public Assistance Status

Source	df	Type III SS	Mean Square	F value	P value
Type Training	1	0.960995	0.960995	0.05	0.8204
Gender	1	13.584034	13.584034	0.73	0.3938
Race/Ethnicity	1	40.522299	40.522299	2.18	0.1417
Age at Job	1	9.521808	9.521808	0.51	0.4751
Public Assistance	1	8.238403	8.238403	0.44	0.5065

Question number 4 was included in the comparisons in questions 1, 2, 3, and 5. No significance was found for the demographic variables of race/ethnicity, age, or public assistance status. The demographic of gender was significant when comparing posttraining wages to pretraining wages at the time of application but was not found to be significant when comparing posttraining wages to pretraining wages within 5 years of application.

The analysis for answering question 5 compared the difference between the pretraining wages and posttraining wages for those with a significant work history and those without a significant work history. As observed from Table 18, there was no significant difference between those subjects with work history and those subjects without work history when comparing posttraining wages to pretraining wages at the time of application. Significance was again found when calculating work history by the gender of the subjects. As observed from Table 19, males obtained a significantly larger difference in wages (8.46) than females (6.23). As presented in Table 20, when posttraining wages were compared to pretraining wages within 5 years of application for significant work history, no



Table 18

Comparison of Posttraining Wage and Pretraining Wage at Time of Application to Work History Controlling for Gender, Race/Ethnicity, Age at Time of Job, and Public Assistance Status

Source	df	Type III SS	Mean Square	F value	P value
Work History	1	2.18216	2.18216	0.14	0.7107
Gender	1	110.68072	110.68072	7.00	0.0089
Race/Ethnicity	1	0.02999	0.02999	0.00	0.9653
Age at Job	1	0.87311	0.87311	0.06	0.8145
Public Assist	1	1.69015	1.69015	0.11	0.7441

Table 19

Comparison of Posttraining Wage and Pretraining Wage at Time of Application to Work History and to Gender

	Diff LSMean	Std Err LSMean	Pr >  T  HO:LSMEAN=0	Pr >  T  HO: LSMEAN1=LSMEAN2
WORK HISTORY				
Not significant	7.41933458	0.52769155	0.0001	0.7107
Significant	7.17893884	0.43524807	0.0001	
GENDER				
Females	6.23822024	0.43778518	0.0001	0.0089
Males	8.36005317	0.62325934	0.0001	

Table 20

Comparison of Posttraining Wage and Pretraining Wage within 5 Years to Work History Controlling for Gender, Race/Ethnicity, Age at Time of Job, Public Assistance Status

Source	df	Type III SS	Mean Square	F value	P value
Work History	1	0.281756	0.281756	0.02	0.9022
Gender	1	11.684347	11.684347	0.63	0.4290
Race/Ethnicity	1	39.131084	39.131084	2.11	0.1487
Age at Job	1	9.949432	9.949432	0.54	0.4654
Public Assistance	1	7.439358	7.439358	0.40	0.5278

significance was found and no significance was found for the work history when considering the gender differences of subjects.

Cost-Benefit Analysis

To determine whether the investment costs of this JTPA training project was equal to, less than, or greater than the federally established goal of 10% rate of return on investment, Woodhall's (1992) rate of return method for analysis of cost benefit was employed. This method yields the rate of interest at which the cost-benefit ratio of the project equals zero.

Woodhall's (1992) internal rate of return was calculated to provide a summary statistic using the following formula:

$$\sum_{t=1}^n \frac{E_t - C_t}{(1+r)^t} = 0$$

where  $n$  is the number of work years,  $E$  is the expected income,  $t$  is the number of years in the future,  $C$  is the cost of training, and  $r$  is the unknown rate of interest.

Benefits measurement, according to Woodhall (1992), is the increased productivity as reflected in increased output and in higher earnings. An estimate of additional lifetime earnings as a result of education is needed to calculate the benefits of the education or training. Cross-section data are used to estimate the average age-education-earnings profiles for each subject as pretraining wage and as posttraining wage; therefore, the lifetime earnings differential can be calculated. According to Woodhall (1992) this differential is the measure of direct economic benefit of education for cost-benefit calculations.

While total income projections provide benefit information about the economy of the nation in general, specific economic benefit to government needs to be measured in actual dollar amounts

returned to the government as a result of the project. Therefore, the differential, reflecting "benefit" or expected income, reported in this study is the projected difference in pretraining wage taxes paid and posttraining wage taxes paid.

For this study data were collected on three wage levels for each subject: wage at time of application, wage within 5 years of application, and wage at completion of training. Wage at the time of application was zero for 90% of subjects. In addition, 32% of subjects were receiving public assistance in the form of Aid for Dependent Children (AFDC) or food stamps, and 21% were receiving, or had exhausted, unemployment compensation benefits.

Aggregate wage at time of application produced an annualized wage of \$1,581. This figure was obviously skewed due to the large number of zero incomes. Using the average age at the time of application, 31.5 years, and assuming that those subjects who were working would continue working in that employment (or lack of employment) situation full time and receive 5% per annum increases to age 63.5, the total lifetime earnings for 32 years of work life were calculated and found to be \$115,286. Using Fleenor's (1998) estimated 35.4% return in taxes, \$40,820 would be returned to

society by each subject at the wage at time of application. Table 21 summarizes the annualized pretraining wage and tax projections for wage at application calculations.

Previous wages, within 5 years, provided a more realistic alternative measure of future income without training and is the measure used to calculate cost benefit for this research. However, this requires an assumption that subjects could have obtained employment at that wage at the time of application for training rather than entering the training program. This research examined the pretraining wages within 5 years of application for the aggregate group and found the annualized wages to be \$11,669. The average student age at time of application was 31.5 years. Assuming that each subject would have continued in that employment situation full time and received 5% per annum increase to age 63.5, the total lifetime wages for 32 years of work life was calculated and found to be \$878,628. Using Fleenor's (1998) estimated 35.4% return in taxes, \$311,034 would be returned to society by each subject at the pretraining wage. Table 22 summarizes the pretraining wages within 5 years of application and taxes generated projections calculations.

Table 21

Annualized Pretraining Wages and Tax Projections for Wage at Application

Years to Age 63.5	Income Earned	Total Income	Taxes Paid	Total Taxes Paid
1	\$1,531	1,531	542	542
2	1,608	3,139	569	1,111
3	1,688	4,827	598	1,709
4	1,772	6,599	627	2,336
5	1,861	8,460	659	2,995
6	1,954	10,414	692	3,687
7	2,052	12,466	726	4,413
8	2,154	14,620	763	5,176
9	2,262	16,882	801	5,977
10	2,375	19,257	841	6,818
11	2,494	21,751	883	7,701
12	2,619	24,370	927	8,628
13	2,749	27,119	973	9,601
14	2,887	30,006	1,022	10,623
15	3,031	33,037	1,073	11,696
16	3,183	36,220	1,127	12,823
17	3,342	39,562	1,183	14,006
18	3,509	43,071	1,242	15,248
19	3,685	46,756	1,304	16,552
20	3,869	50,625	1,370	17,922
21	4,062	54,687	1,438	19,360
22	4,265	58,952	1,510	20,870
23	4,479	63,431	1,586	22,456
24	4,703	68,134	1,665	24,121
25	4,938	73,072	1,748	25,869
26	5,185	78,257	1,835	27,704
27	5,444	83,701	1,927	29,631
28	5,716	89,417	2,023	31,662
29	6,002	95,419	2,125	33,787
30	6,302	101,721	2,231	36,018
31	6,617	108,338	2,342	38,360
32	6,948	115,286	2,460	40,820
33	7,296	122,582	2,583	43,403
34	7,660	130,242	2,712	46,115
35	8,043	138,285	2,847	48,962
36	8,446	146,731	2,990	51,952
37	8,870	155,601	3,140	55,092

Table 21--continued.

Years to Age 63.5	Income Earned	Total Income	Taxes Paid	Total Taxes Paid
38	9,311	164,912	3,296	58,388
39	9,777	174,689	3,461	61,849
40	10,266	184,955	3,634	65,483
41	10,779	195,734	3,816	69,299
42	11,318	207,052	4,007	73,306
43	11,884	218,936	4,207	77,513
44	12,478	231,414	4,417	81,930
45	13,102	244,516	4,638	86,568

Table 22

Annualized Pretraining Wages within 5 Years of Application and Taxes Generated Projections

Years to Age 63.5	Income Earned	Total Income	Taxes Paid	Total Taxes Paid
1	\$11,669	11,669	4,131	4,131
2	12,252	23,921	4,337	8,468
3	12,865	36,786	4,554	13,022
4	13,508	50,294	4,782	17,804
5	14,183	64,477	5,021	22,825
6	14,892	79,369	5,272	28,097
7	15,637	95,006	5,535	33,632
8	16,419	111,425	5,812	39,444
9	17,240	128,665	6,103	45,547
10	18,102	146,767	6,408	51,956
11	19,007	165,774	6,728	58,684
12	19,957	185,731	7,065	65,749
13	20,955	206,686	7,418	73,167
14	22,003	228,689	7,789	80,956
15	23,103	251,792	8,178	89,134
16	24,258	276,050	8,587	97,723
17	25,471	301,521	9,017	106,738
18	26,745	328,266	9,468	116,206
19	28,082	356,348	9,941	126,147
20	29,486	385,834	10,438	136,585
21	30,960	416,794	10,960	147,545
22	32,508	449,302	11,508	159,053
23	34,133	483,435	12,083	171,136
24	35,840	519,275	12,687	183,823
25	37,632	556,907	13,322	197,145
26	39,514	596,421	13,988	211,133
27	41,490	637,911	14,687	225,820
28	43,564	681,475	15,422	241,242
29	45,742	727,217	16,193	257,435
30	48,029	775,246	17,002	274,437
31	50,430	825,676	17,852	292,289
32	52,952	878,628	18,745	311,034
33	55,600	934,228	19,682	330,717
34	58,380	992,608	20,667	351,383
35	61,300	1,053,908	21,700	373,083
36	64,365	1,118,273	22,785	395,869
37	67,583	1,185,856	23,924	419,793



Table 22--continued.

Years to Age 63.5	Income Earned	Total Income	Taxes Paid	Total Taxes Paid
38	70,962	1,256,818	25,121	444,914
39	74,510	1,331,328	26,377	471,290
40	78,236	1,409,564	27,696	498,986
41	82,148	1,491,712	29,080	528,066
42	86,255	1,577,967	30,534	558,600
43	90,568	1,668,535	32,061	590,661
44	95,096	1,763,631	33,664	624,325
45	99,851	1,863,482	35,347	659,967

The data set provided the posttraining wages for the aggregate group and found that the annualized wages to be \$15,350, a difference of \$3681 over the pretraining wage. The average age at the time of completion of training was 32.8 years of age. Assuming that each subject would have continued in that employment situation full time and received 5% per annum increase to age 63.5, the total lifetime for 31 years of work life were calculated and found to be \$1,089,695. Using Fleenor's (1998) estimated 35.4% return in taxes, \$385,752 would be returned to society by each subject at the posttraining wage. Table 23 summarizes the posttraining wage and taxes generated projections calculations. Table 24 summarizes the projected aggregate wage and tax data from Tables 21, 22, and 23.

Comparing wage at application tax revenues generated with posttraining wage tax revenues generated finds a projected net lifetime gain of \$344,932. This figure does not provide a realistic basis of comparison as it is extremely unlikely that the 90% of subjects with zero wage at the time of application would have continued in a zero wage situation for the remainder of their projected work life. Therefore, the figures for the pretraining wage

Table 23

Annualized Posttraining Wage and Tax Projections

Years to Age 63.5	Income Earned	Total Income	Taxes Paid	Total Taxes Paid
1	\$15,350	15,350	5,434	5,434
2	16,118	31,468	5,991	11,140
3	16,924	48,392	5,991	17,131
4	17,770	66,162	6,291	23,421
5	18,659	84,821	6,605	30,027
6	19,592	104,413	6,936	36,962
7	20,572	124,985	7,282	44,245
8	21,601	146,586	7,647	51,891
9	22,681	169,267	8,029	59,921
10	23,815	193,082	8,431	68,351
11	25,006	218,088	8,852	77,203
12	26,256	244,344	9,295	86,498
13	27,688	272,032	9,802	96,299
14	29,066	301,098	10,289	106,589
15	30,519	331,617	10,804	117,392
16	32,045	363,662	11,344	128,736
17	33,647	397,309	11,911	140,647
18	35,329	432,638	12,506	153,154
19	37,095	469,733	13,132	166,285
20	38,950	508,683	13,788	180,074
21	40,897	549,580	14,478	194,551
22	42,942	592,522	15,201	209,753
23	45,089	637,611	15,962	225,714
24	47,343	684,954	16,759	242,474
25	49,710	734,664	17,597	260,071
26	52,196	786,860	18,477	278,548
27	54,806	841,666	19,401	297,950
28	57,546	899,212	20,371	318,321
29	60,423	959,635	21,390	339,711
30	63,444	1,023,079	22,459	362,170
31	66,616	1,089,695	23,582	385,752
32	69,947	1,159,642	24,761	410,513
33	73,444	1,233,086	25,999	436,512
34	77,116	1,310,202	27,299	463,812
35	80,972	1,391,174	28,664	492,476
36	85,021	1,476,195	30,097	522,573
37	89,272	1,565,467	31,602	554,175

Table 23--continued.

Years to Age 63.5	Income Earned	Total Income	Taxes Paid	Total Taxes Paid
38	93,736	1,659,203	33,183	587,358
39	98,423	1,757,626	34,842	622,200
40	103,344	1,860,970	36,584	658,783
41	108,511	1,969,481	38,413	697,196
42	113,937	2,083,418	40,334	737,530
43	119,634	2,203,052	42,350	779,880
44	125,616	2,328,668	44,468	824,348
45	131,897	2,460,565	46,692	871,040

Table 24

Projected Wage and Tax Aggregate Data

	Pretraining Wage at Application	Pretraining Within 5 Years	Posttraining
Aggregate annualized wage	\$1,581	11,669	15,350
Total lifetime earnings	115,286	878,628	1,089,695
Total taxes paid	40,820	311,034	385,752
-----			
Difference in tax revenues paid:			
Pretraining at application and Posttraining			\$344,932
Pretraining within five years and Posttraining			74,718

within 5 years was used in the cost-benefit calculation. Comparing pretraining, within 5 years of application, and posttraining tax revenues, a projected net lifetime tax gain of \$74,718 (a 24% increase) is realized for each completer of training who entered a training- related employment situation. Given that 139 students completed training and obtained training-related employment, the project will have provided a projected net gain in tax revenues of \$10,385,802.

However, accurate comparison of present-day costs with expected future income requires discounting of the future flow of income. Applying the discounted cash flow technique yielded the present value of project tax returns at various assumed rates of interest as displayed in Table 25. In calculating the discount, the number of years used was 31.5 since that is the number of years from the aggregate age of completion to the midpoint social security retirement age. The additional tax revenue posttraining is \$74,718. Using an assumed discount rate of 3% provides the present value of the additional tax revenues of \$28,960 for each student, a total of \$4,025,440 for the 139 subjects who completed training and obtained training-related employment.

Table 25

Present Value Calculations of Projected Tax Revenues

Additional Tax Revenues	Assumed Discount Rate	Present Value
\$74,718	1	54,539
74,718	3	28,960
74,718	5	15,697
74,718	7	8,569
74,718	10	3,539

Woodhall also noted that accurately measuring costs needs to include the foregone productivity (wages) of the students. The average training time for subjects in this research was 1.13 years. Therefore in the aggregate each subject would have foregone \$13,186 in income while in training. Students will have retrieved foregone income before the end of the fourth year of work. Table 26 displays foregone wages information.

Table 26

Foregone Earnings

Year	Pretraining Income Within 5 Years	Posttraining Income	Annual Difference	Aggregate Difference	Catch Up
1	\$11,669	0	11,669	11,669	
2	12,252	15,350	-3,098	8,571	3,098
3	12,865	16,118	-3,253	5,318	6,351
4	13,508	16,924	-3,416	1,902	9,767
5	14,183	17,770	-3,587	-1,685	13,354

Analysis focused on total program costs, attributing all costs to those students who completed training and secured employment in a training-related field. In other words, costs for noncompleters and for completers or noncompleters who obtained employment in nontraining-related fields were included as costs of the training of

completers who obtained training-related employment. This approach allows for what Woodhall (1992) termed "wastage."

To find the cost, C, of a training-related placement by this project, the total cash expenditures of the project over the 2-year time frame of this study (see Appendix B) was divided by the total number of training-related placement during the 2-year time frame of the study:

$$\$1,088,070 \div 139 = \$7,828$$

Using Woodhall's formula to obtain the rate of return on investment at the discount rate of 3% reveals the following at various interest rates:

$$\text{At } r = 9\% \quad \sum_{t=1}^n \frac{E_t - C_t}{(1+r)^t} \text{ is positive}$$

$$\text{At } r = 11\% \quad \sum_{t=1}^n \frac{E_t - C_t}{(1+r)^t} \text{ is negative}$$

$$\text{At } r = 10\% \quad \sum_{t=1}^n \frac{E_t - C_t}{(1+r)^t} = 0$$

Therefore, the internal rate of return of the project at a 3% discount rate is 10%.



### Summary

The employment and training outcomes of a north Florida community college job training program funded by Federal Job Training Partnership funds were examined by this research to determine if the investment costs of the training was equal to, less than, or more than the federally established goal of 10% rate of return to investment in the form of increased tax dollars as a result of training. The research considered the outcomes for a 2-year period, July 1, 1994, through June 30, 1996. Pretraining wages were based on the subjects' wages within the 5-year period preceding application to the program due to the large number of zero incomes of the subjects at the time of application to the project. Sample size was 175 subjects.

A series of questions guided the determination of the benefit of the project with posttraining wages as the dependent variable. Analysis of variance of independent samples and repeated measures was employed to answer the following questions:

1. What is the difference in pre- and posttraining wages when compared to completion or noncompletion of training?

2. What is the difference in pre- and posttraining wages when compared to the job placements in the field of training and job placements outside the field of training?

3. What is the difference in pre- and posttraining wages when compared by type of training completed?

4. What is the difference in pre-and posttraining wages when controlled for student demographics of gender, race/ethnicity, age, and public assistance status?

5. What is the difference between pre- and posttraining wages for those who had no significant pretraining work history and the posttraining wages of those who had a significant work history?

Analysis of variance was conducted to compare pretraining wage at time of application to posttraining wage and then repeated to compare pretraining wage within 5 years of application to posttraining wage. Training was found to have a significant effect on wages in both instances. When comparing pretraining wage at time of application, both completion and noncompletion had a significant effect on posttraining wage. When comparing pretraining wage within 5 years of application, completers gained significantly in posttraining wage but noncompleters did not. Similarly, when

analyzing for type of employment, both training-related and nontraining-related employment resulted in a significant wage increase posttraining compared to pretraining wage at time of application, but when compared to pretraining wage within 5 years of application, only training-related employment resulted in significant increases in posttraining wage.

Type of training, whether vocational certificate or Associate of Science degree, did not have a significant effect on posttraining wages using either pretraining wage. Presence or absence of significant work history, by JTPA definition, did not have a significant effect on posttraining wages. Demographic factors of race/ethnicity, age, or public assistance status did not impact significantly on posttraining wages. The demographic factor of gender was found to be significant when comparing posttraining wages to pretraining wage at the time of application but not significant when comparing posttraining wage to pretraining wage within 5 years of application.

Analysis of variance established that the outcomes of the JTPA training project were positive. Cost-benefit analysis was then conducted to determine if the project returns economic benefits to

society sufficient to justify the expenditure to obtain those positive outcomes. Using a 3% discount rate, calculation found that the project is projected to return tax revenues to society at a 10% rate which is equal to the federally established goal for rate of return on investment.

## CHAPTER 5

### CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS FOR FURTHER RESEARCH

The purpose of this study was to learn if the employment and training program of a community college job training program funded under the federal Job Training and Partnership Act (JTPA) produced outcomes in relation to the costs and benefits of the program. The outcomes of this program provided information towards determining if JTPA is a viable strategy for accomplishing national training goals.

Specifically, the purpose of the study was to determine if the investment costs of this JTPA training project was equal to, less than, or more than the federally established goal of a 10% rate of return to investment. The following questions guided the direction of this study:

1. What is the difference in pre- and posttraining wages when compared to the completion or noncompletion of training?

2. What is the difference in pre- and posttraining wages when compared to the job placements in the field of training and job placements outside the field of training?

3. What is the difference in pre- and posttraining wages when compared by type of training completed?

4. What is the difference in pre- and post-training wages when controlled for student demographics of gender, race/ethnicity, age, and public assistance status?

5. What is the difference between the posttraining wages for those who had no significant pretraining work history and the posttraining wages of those who had a significant work history before training?

### Conclusions

To establish the cost and benefits of a job training program, the benefits must first be assessed in terms of whether the program accomplishes the intended results. In the case of JTPA, the stated federal purpose is to transition hard-to-place individuals from unemployment to work in positions which provide a wage better than the individual would have been able to obtain without the training. While certain basic elements are required by the JTPA

legislation, programs vary widely in implementation. This research examined a project at a community college to ascertain whether the outcomes were positive and, if so, was the monetary return sufficient to justify the expense of tax monies.

The JTPA programs routinely gather data about the basic outcomes of completion of training and type of job placement after training. For the program under study during the 2-year period of this research, 143 (82%) of the 175 job training students completed their selected training (Appendix A). Of those 143 completers, 133 (76%) obtained employment in their field of training (Appendix A). While these percentages exceed the federally established requirement for a minimum of 70% who complete training and find training-related employment, the figures do not demonstrate whether the training resulted in wages that represent an improvement in the individual's earning power and/or ability to contribute to government coffers through taxes paid.

Analysis comparing wages to completion of training and to placement in training-related employment found that, in addition to attaining the federal standards, this project provided training which attained a statistically significant wage increase for completers of

training. This statistically significant wage increase was observed whether the wage was compared to the wage at time of application or to the previous wage within 5 years of application. In addition, completers who obtained nontraining-related employment and noncompleters who obtained employment (40% of noncompleters) also significantly improved their wages from their wage at time of application. When compared to previous wage within 5 years, noncompleters and completers who obtained nontraining-related employment did not significantly improve their earnings. The analysis clearly shows that a positive difference in wages exists for completers of the training provided by this project who obtained training-related employment.

The factors of type of training, Associate of Science degree or vocational certificate, and previous work history statistically had no impact on wages obtained after training when compared to wages at the time of application or previous wages within 5 years. Significant increases in wages were seen for both Associate of Science degree and vocational certificate completers. Similarly, demographic factors of race/ethnicity, age and public assistance status had no statistically significant impact on wages obtained after training when compared



to either wage at time of application or wage within 5 years of application.

However, gender of the subject did have a statistically significant impact on posttraining wages when compared to the wage at application for the factors of completion of training, relatedness of employment to training, type of training, and work history. In all cases males gained significantly in wage improvement from their wage at application to their posttraining wage. This difference was not seen for females. When the posttraining wage was compared to previous wage within 5 years of application, this effect for males disappeared. The implication here is that males do obtain higher wages than females posttraining. Although this difference is not enough to be significant when compared to previous wages, it does show up when compared to the application wage which was close to zero. The fact that this difference was present in all four variables at application wage compared to posttraining wage indicated that the male-female variance is an important factor in earnings potential.

Cost benefit analysis, using Woodhall's formula and a 3% discount rate, found that the project rate of return in the form of taxes paid was 10% when posttraining wages were compared to

previous wage within 5 years. Ten percent is the federally established goal for investment.

### Discussion

This research supports previous research findings that education results in greater productivity as measured by higher earnings. Training resulted in higher paying employment for subjects who completed training and obtained training-related employment. This result held true when wage projections were completed for wage at application as well as for wage at the previous wage within 5 years of application. Wage at time of application was zero for 90% of the subjects; therefore, the improvement in wages posttraining is not surprising. However, previous wage within 5 years provided a realistic basis of comparison for the wage that the subjects could hope to obtain once they found reemployment.

Wage projections comparing the previous wage, within 5 years, and the posttraining wage found significant increases in wage. This is a compelling finding given that subjects had not been able to find employment and may have continued at zero wage for an unforeseen amount of time had they not elected to participate in training. Foregone wages become less of an issue when you are unemployed

and have been unsuccessful in job search efforts. For the 21% of subjects who were either receiving unemployment compensation or had exhausted unemployment compensation benefits, job searching had not only been a requirement of the unemployment compensation system but also had been a requirement of their eligibility for training by JTPA. Given this fact, it can be assumed that for at least 21% of the subjects, zero income was not a lifestyle choice but a fact of the mix of labor market demands and skill level deficits.

In addition, 32% of subjects were not only receiving no wages at all but also were receiving public assistance. This means that prior to obtaining employment as a result of job training, they were receiving government tax-supported funds from another government source. As a result of training and obtaining employment, they not only improved their wage earning ability but also ceased dependence on other public funds. This recapturing of government funds was not calculated in this research but presumably would increase the benefit of the project had these costs been factored into the cost-benefit equation.

The issue of job training for citizens who receive public assistance has become a more critical dialog since the

implementation of welfare reform in 1996. As the public funding for families is decreased, the need for unskilled individuals to obtain training and enter the work force increases. A logical consequence of public allocation of funds would be for some of the savings in the welfare budget to be diverted to new or expanded training programs. This potential reallocation of public funds into training creates a more urgent need to identify training programs, such as the one examined in this research, which accomplish the employment goal within a framework of a positive benefit to cost ratio.

National issues regarding the need to remain globally competitive, develop our human resources, and at the same time accomplish the greatest public benefit for public costs, will remain well into the future. Postsecondary education will continue to be asked to respond to the need for a skilled workforce. Demand for public dollars will continue to grow while supply shrinks. These concerns have implications for leaders in higher education to consider. The emphasis in the future will continue to focus on positive outcomes at a high rate of return on investment. Vocational training programs will need to demonstrate that these desired goals can be accomplished in order to continue to receive federal funds.

Information on programs that work is a necessary component of designing programs and devising techniques to successfully accomplish national training goals.

The project for job training examined in this research presents a viable means to move people from dependency and poverty to independence and employment which is a benefit for individuals and for the society as a whole. The vocational training provided by this project was offered in a community college setting. The success of this project supports the recommendations in the literature regarding the potential of the community college as the provider of training which is capable of supplying business and industry with the skilled human resources necessary to compete in the world marketplace and build a strong national economy.

#### Recommendations for Further Research

Job training constitutes an important governmental function. Determining how to accomplish this function in an effective and efficient manner is an issue of concern to government, taxpayers, and providers of training. Training delivery systems need models on which programs can be designed, implemented, and adapted.

More research such as this one is needed to provide data on the viability of various programs for the new and expanding training programs developing as the welfare system continues to shrink over the next decade. Because training and employment programs must of necessity vary from one geographic location to another, a variety of models that have been statistically verified as successful in meeting goals in a cost effective manner need to be available. It would be beneficial for other researchers to examine other JTPA training programs to establish which have been successful at meeting goals and at maintaining a positive cost-to-benefit ratio. It would be of particular interest to examine those programs offered at community colleges in various locales.

Since JTPA is federal money, it would be useful if the federal government could mobilize its resources to conduct a study on a national basis which would identify which type of program works best in which type of labor market. Some of the elements for such a study, the outcome data, are already being compiled state by state. Further study and application of cost benefit analysis could lead to a more effective and cost efficient use of current and future JTPA funds.

Studies such as this one of necessity rely on cross sectional data for projections of income. A longitudinal study which gathers actual income data on a sample of JTPA training graduates and noncompleters would provide more reliable information for making funding decisions in the future.

Another area for future research would be to determine the benefits of training beyond the monetary benefits. The indirect or social benefits may be as beneficial or potentially more beneficial than the direct financial benefits.

APPENDIX A  
MATRIX OF DATA FOR VARIABLES OF TRAINING

Outcome Summary n=175		Employment			
		Training Related	Nontraining Related	No Job	Total
Training Completers	Vocational Certificate	102	3	5	110
	A.S. degree	31	0	2	33
Training Noncompleters	Vocational Certificate	5	6	11	22
	A.S. degree	1	3	6	10
Totals		139	12	24	175



APPENDIX B  
CASH FROM JTPA FEDERAL DOLLARS RECEIVED  
BY THE PROJECT

(July 1, 1994 through June 30, 1996)

1994-95 JTPA Funds Expended by the Project

Title II-A	306,879	
Title II-C	106,318	
Title III	<u>125,273</u>	
		538,470

1995-96 JTPA Funds Expended by the Project

Title II-A	287,111	
Title II-C	115,285	
Title III	<u>147,204</u>	
		<u>549,600</u>

TOTAL 1,088,070

APPENDIX C  
HUMAN SUBJECTS FORM

UNIVERSITY OF FLORIDA  
INSTITUTIONAL REVIEW BOARD  
114 Psychology Building  
Gainesville, FL 32611-2250

Harriet S. Hayes

phone: (352)-392-0433  
fax: (352)-392-0433  
e-mail: hayes@psych.ufl.edu

November 12, 1996

TO: Ms. Donna Carter  
2616 NW 49th Place  
Gainesville, FL 32605

FROM: Harriet S. Hayes, Executive Secretary  
University of Florida Institutional Review Board

SUBJECT: UFIRB Project #96.575  
Study of the employment outcomes of a job training program in a  
community college setting  
Funding: Unfunded

The project referenced above has been reviewed by the Chair of the Institutional Review Board. He has determined that only existing data will be used in this project; therefore, it is exempt from further review by this Board, as no human participants are involved in this research. It is our understanding that there will be no direct contact with participants and data will be anonymous.

If a revision of this project should indicate the need for human research participants, please contact this office for additional review.

/h<sup>2</sup>

cc: Vice President for Research  
John Nickens

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## BIOGRAPHICAL SKETCH

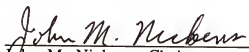
Donna Carter received her Bachelor of Arts degree in history and social studies from Stetson University. After 4 years of public school experience as both teacher and school social worker, she returned to school full time and obtained her Master of Social Work degree from Florida State University.

Ms. Carter's professional career has followed two tracks. As a social services professional, she worked in several interesting and challenging positions: assistant staff advisor to the patient government organization of a large California mental health institution, first executive director of the spouse abuse shelter in Orlando, Florida, and several different positions, including executive director, for Children's Home Society of Florida.

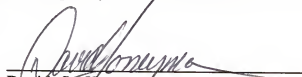
In 1989, Ms. Carter returned to education as a coordinator in the job training program of Santa Fe Community College in Gainesville, Florida, where she remained for over 8 years. In 1991 she began her part-time doctoral work in educational leadership at the University of Florida.

Currently, Ms. Carter is establishing a training and development firm in the Atlanta, Georgia, area providing employee training, grant writing, and program implementation services.

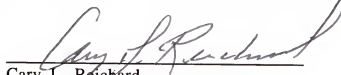
I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

  
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John M. Nickens, Chair  
Professor of Educational Leadership

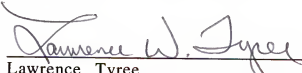
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David S. Honeyman  
Professor of Educational Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

  
\_\_\_\_\_  
Cary L. Reichard  
Professor of Special Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Education.

  
\_\_\_\_\_  
Lawrence Tyree  
Professor of Educational Leadership

This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Education.

May 1999

  
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Dean, College of Education

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Dean, Graduate School